

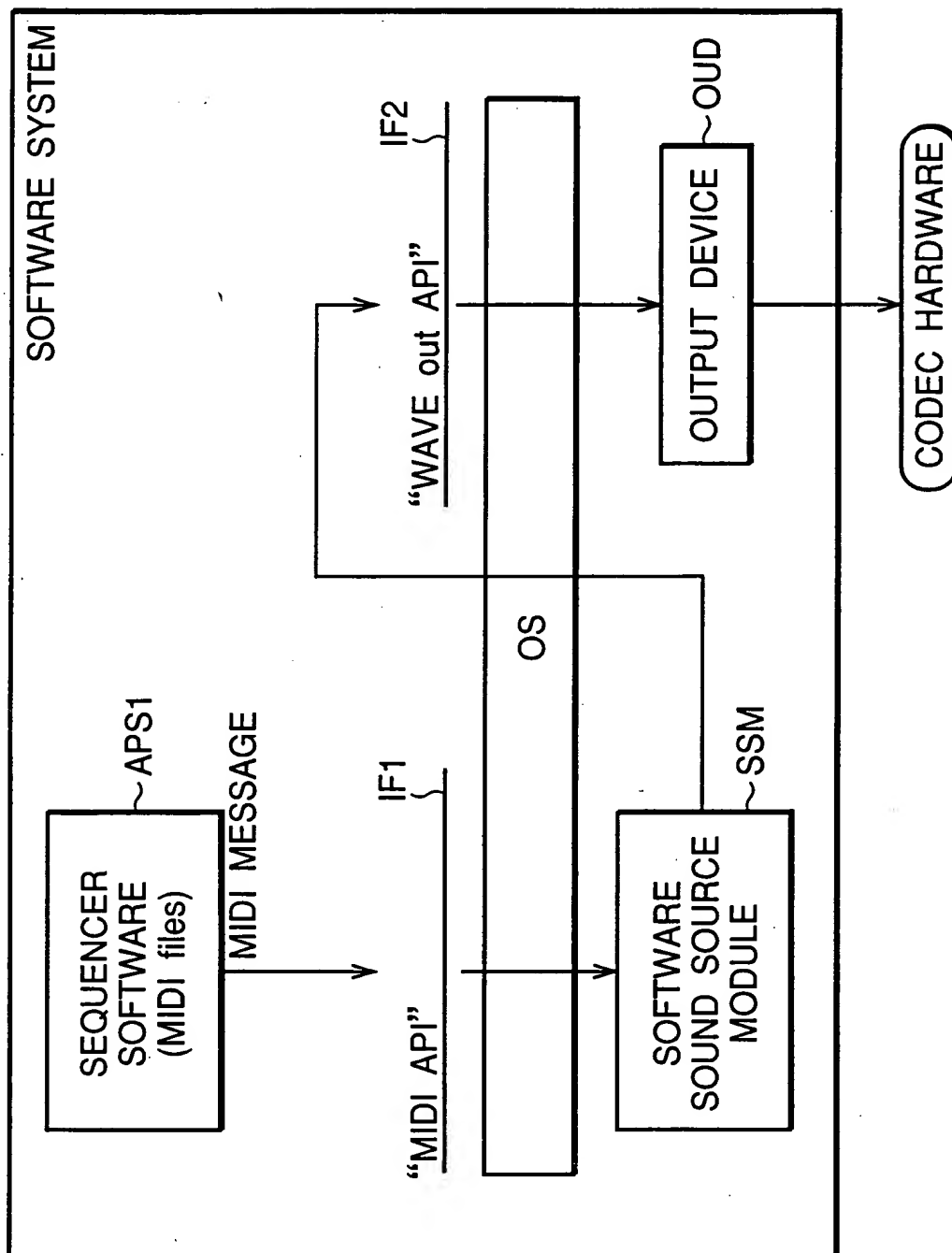
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APPROVED	O.G. FIG. 3,4B	
BY	CLASS	SUBCLASS
DRAFTSMAN	84	603

5981860

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FIG.1

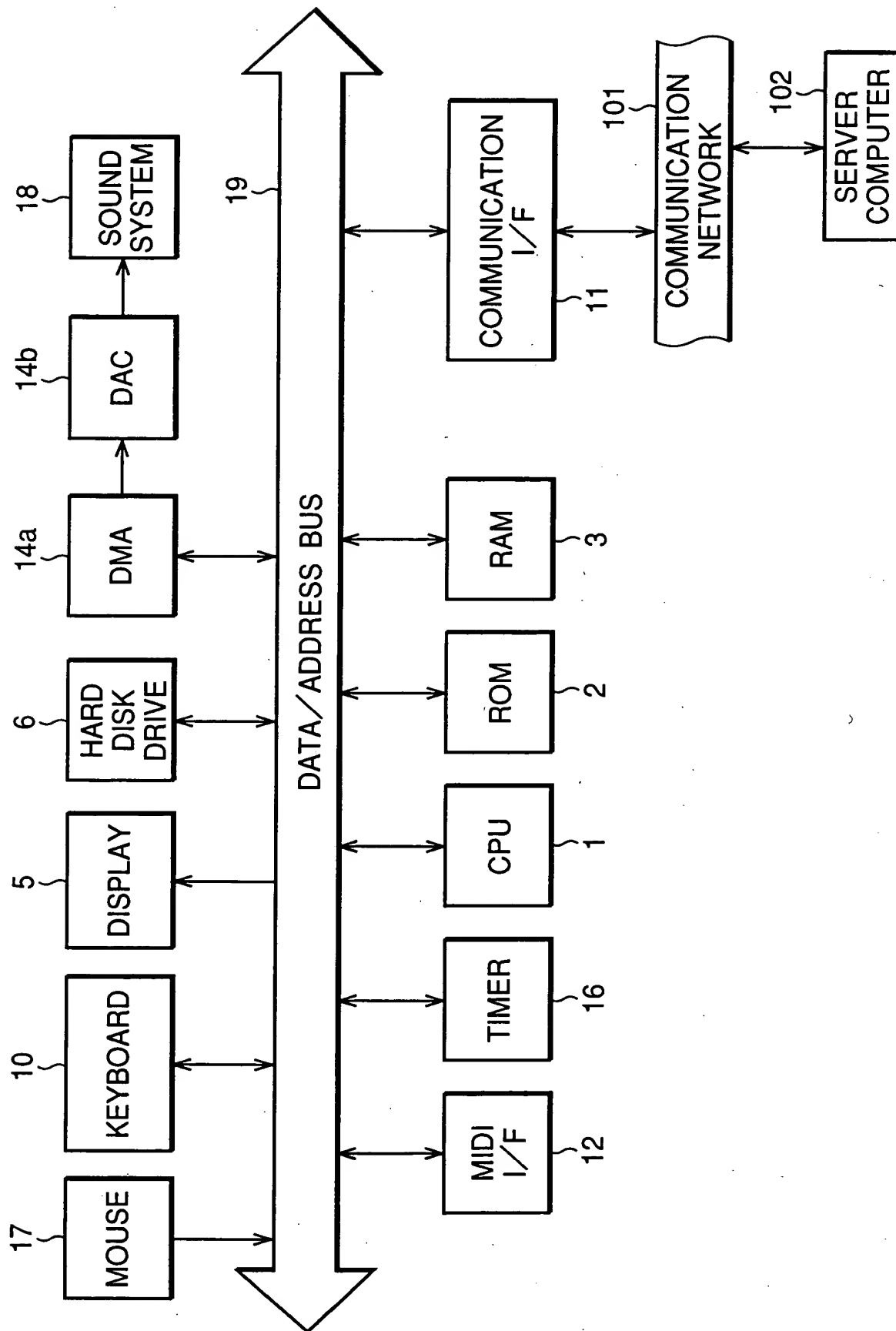


52 fig

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.2

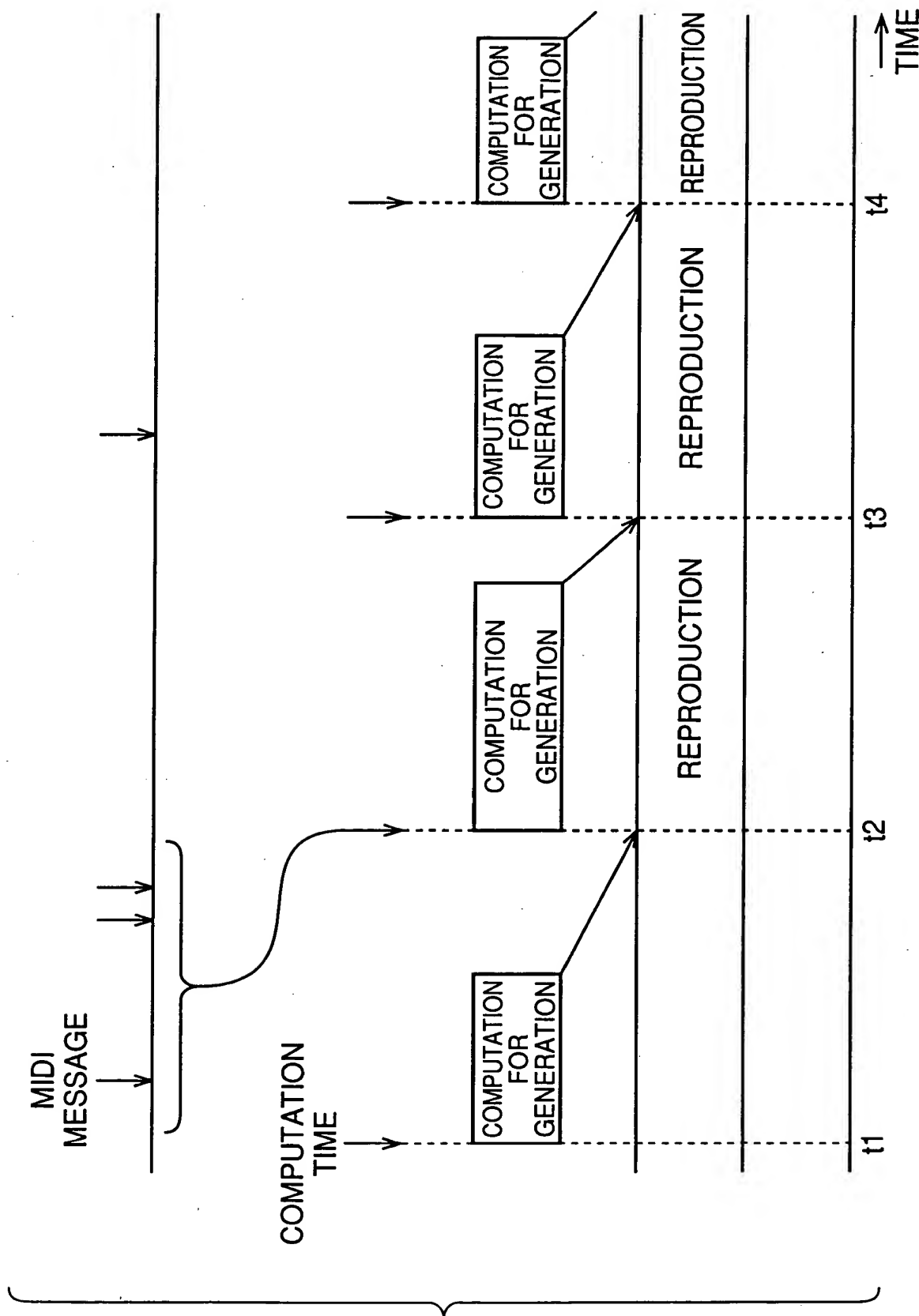


455280 47602630

APPROVED	O.G. FIG. 3, 4B	
BY	CLASS	SUBCLASS
DRAFTSMAN	84	603

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FIG.3



APPROVED	O.G. FIG. 3, 4B	
BY	CLASS	SUBCLASS
DRAFTSMAN	84	603

4 / 41

FIG. 4A



FIG. 4B

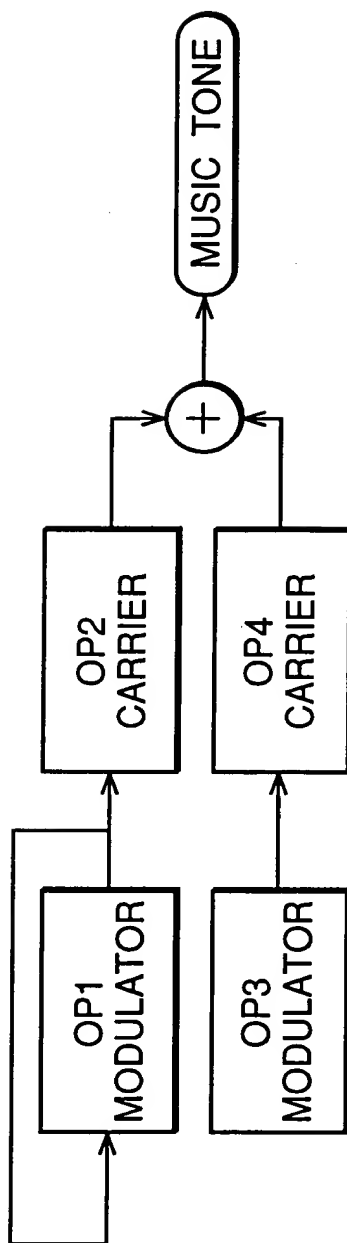
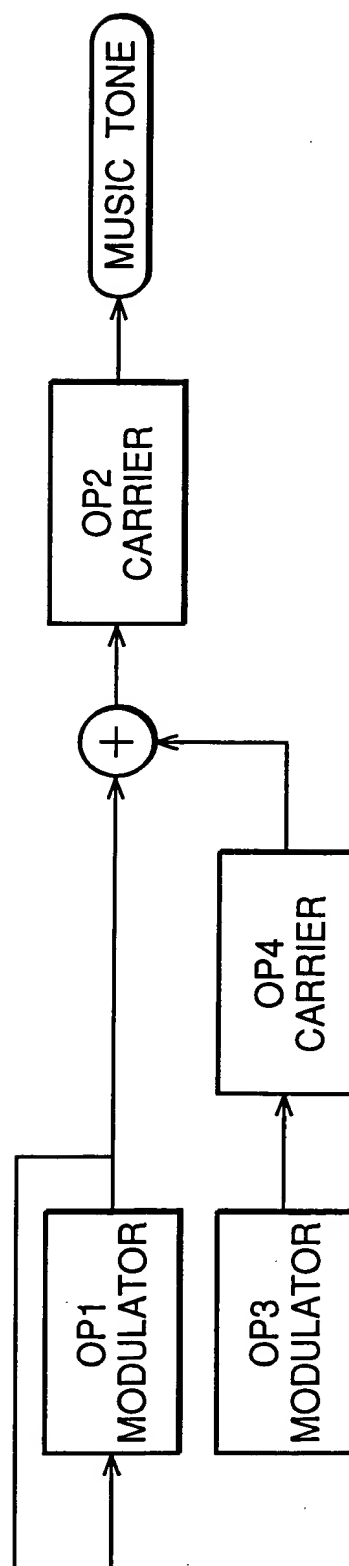


FIG. 4C



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG.5

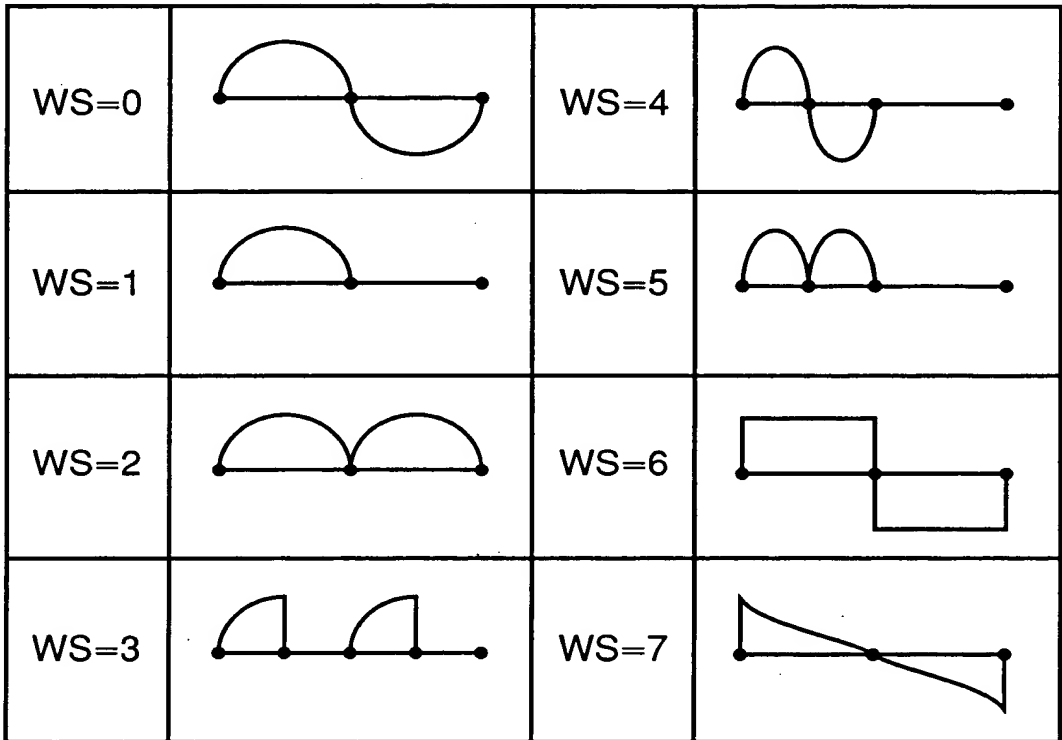


FIG.6

TONEPAR1
TONEPAR2
⋮
TONEPARn
⋮

265280 24502680

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

465280 4602680

FIG.7A

VOICEj

KEYONj
FNOj
ALGORj
VOLj
VELj
OP1DATAj
OP2DATAj
:
OPmDATAj

FIG.7B

FSAMPm
MULTm
FBLm
WSELm
TLm
EGPARm
MSCm
OPPRIOm
OPBUFm

FIG.7C

OPONm
PHBUFm
FBm
MODINm
OPOUTm
EGSTATEm

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.8

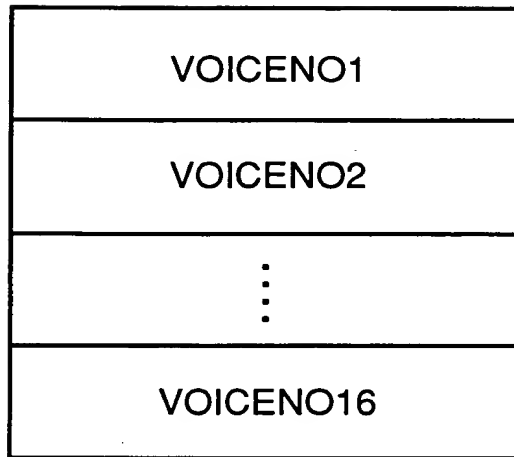
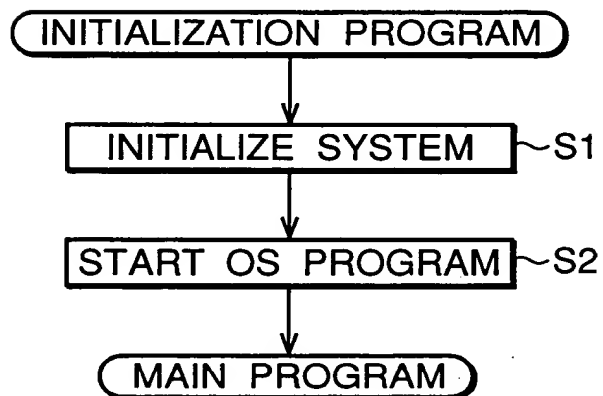
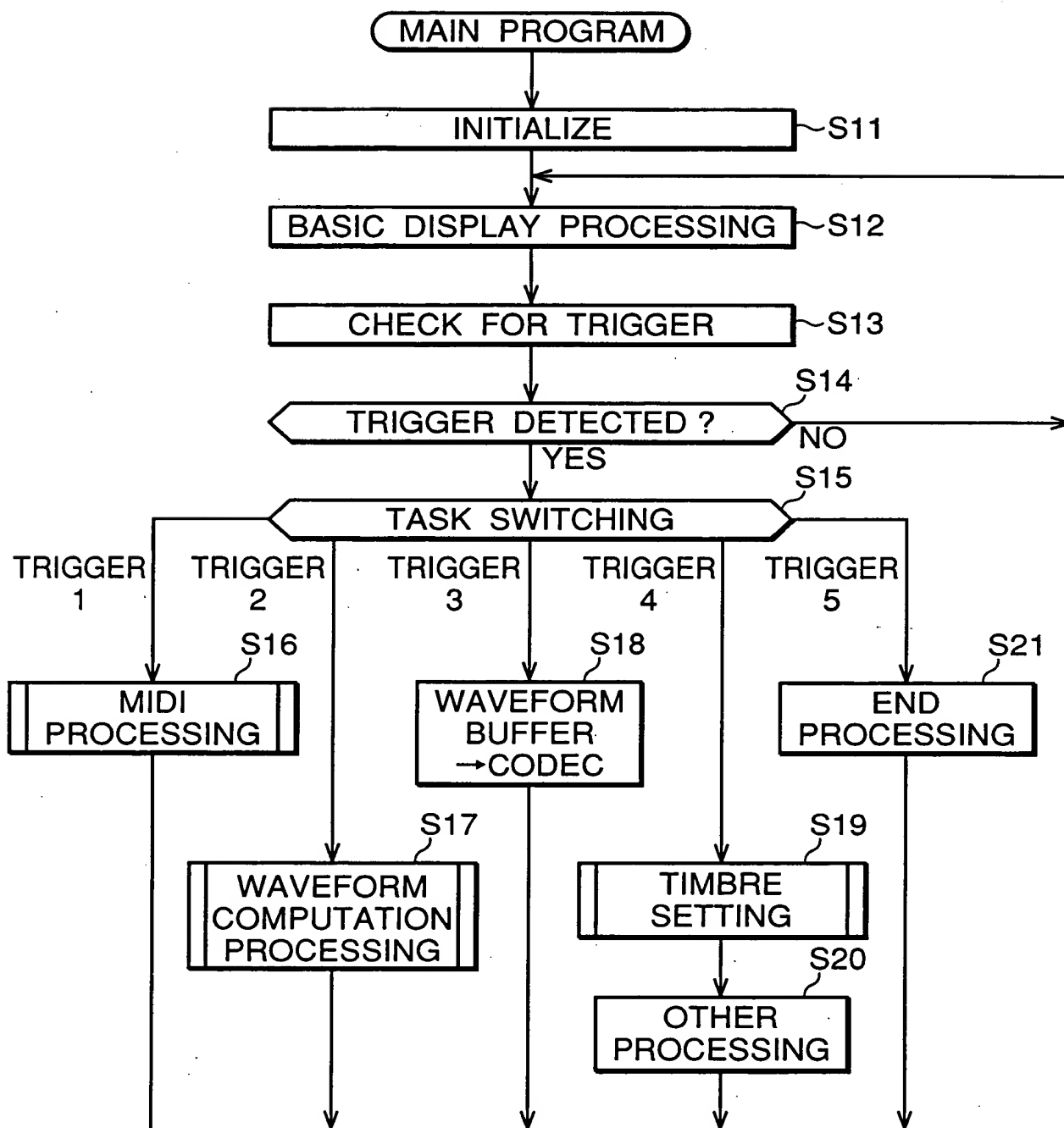


FIG.9



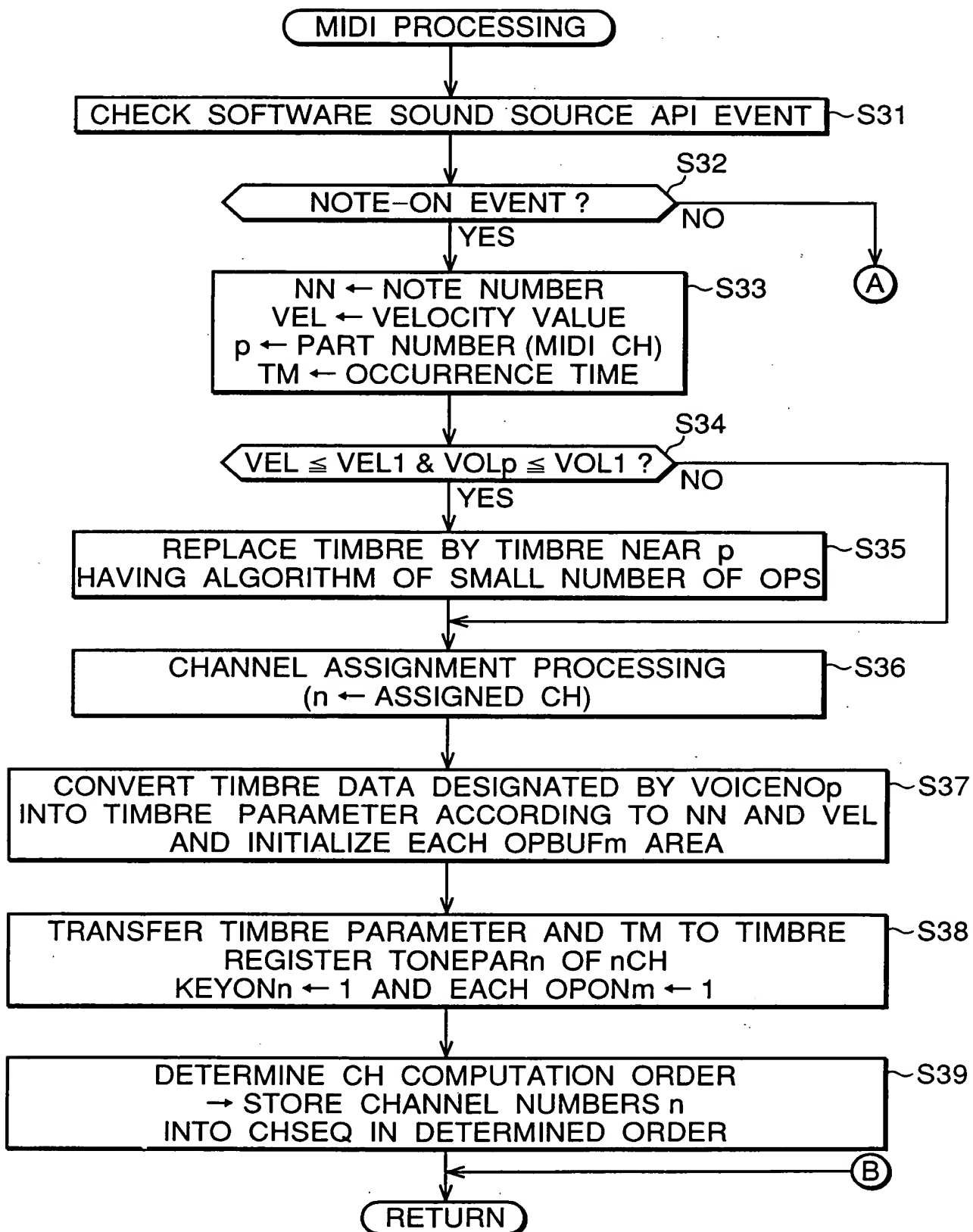
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FIG.10



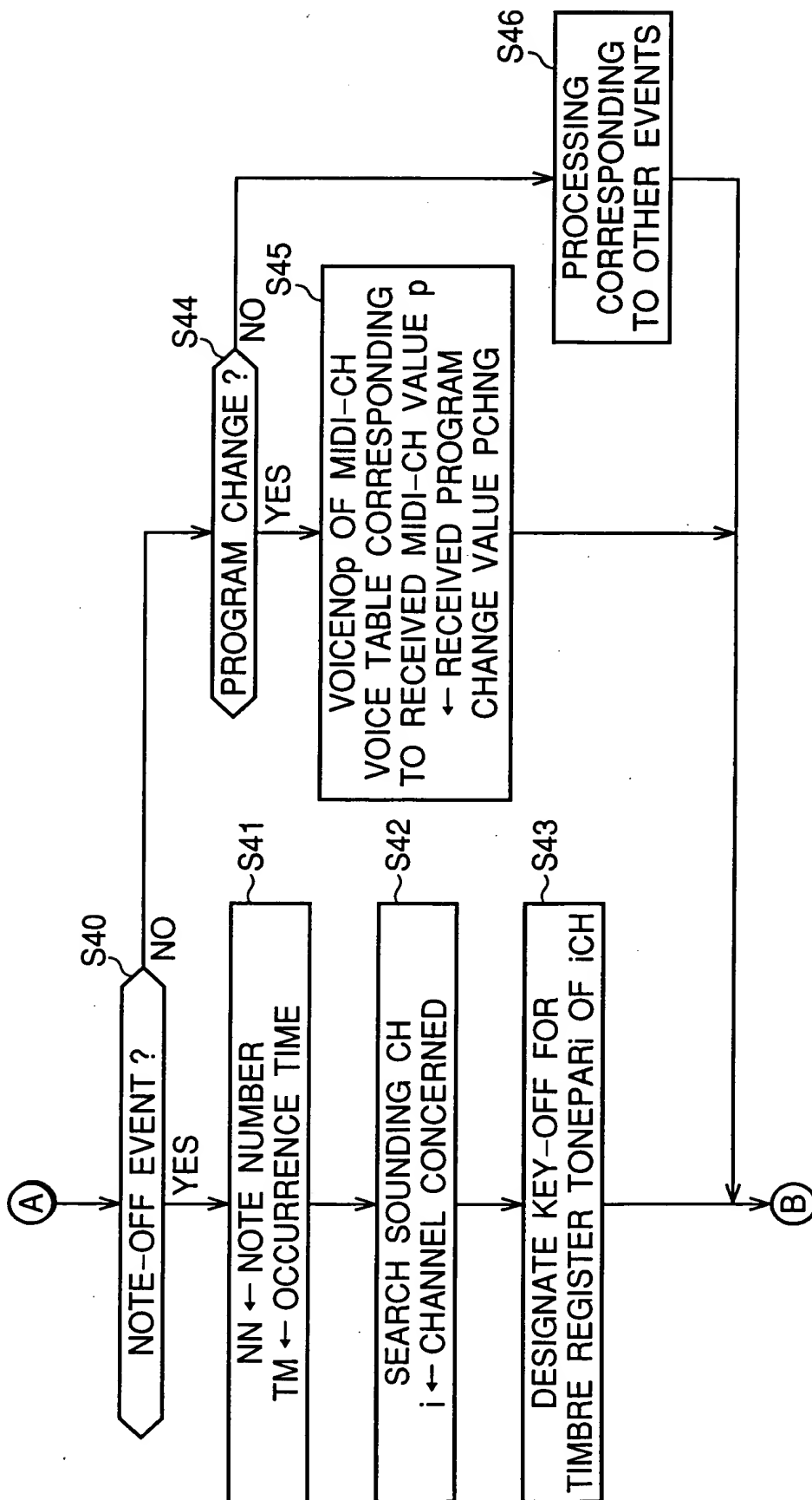
Approved: 4602680

FIG.11



456280 41602680

FIG.12



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.13

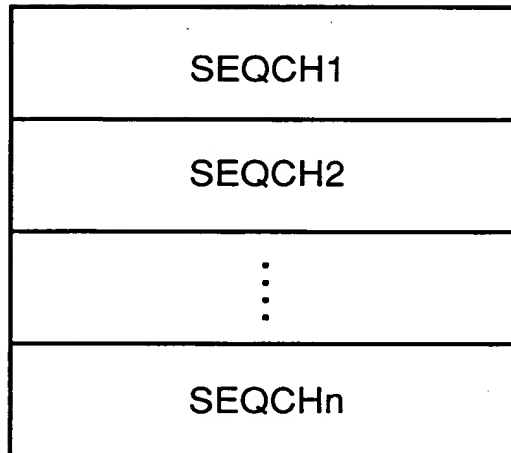
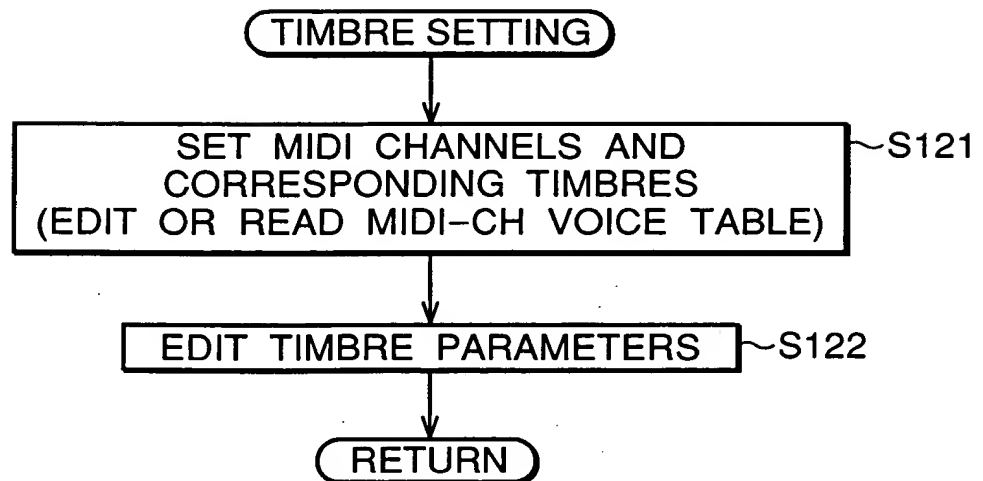


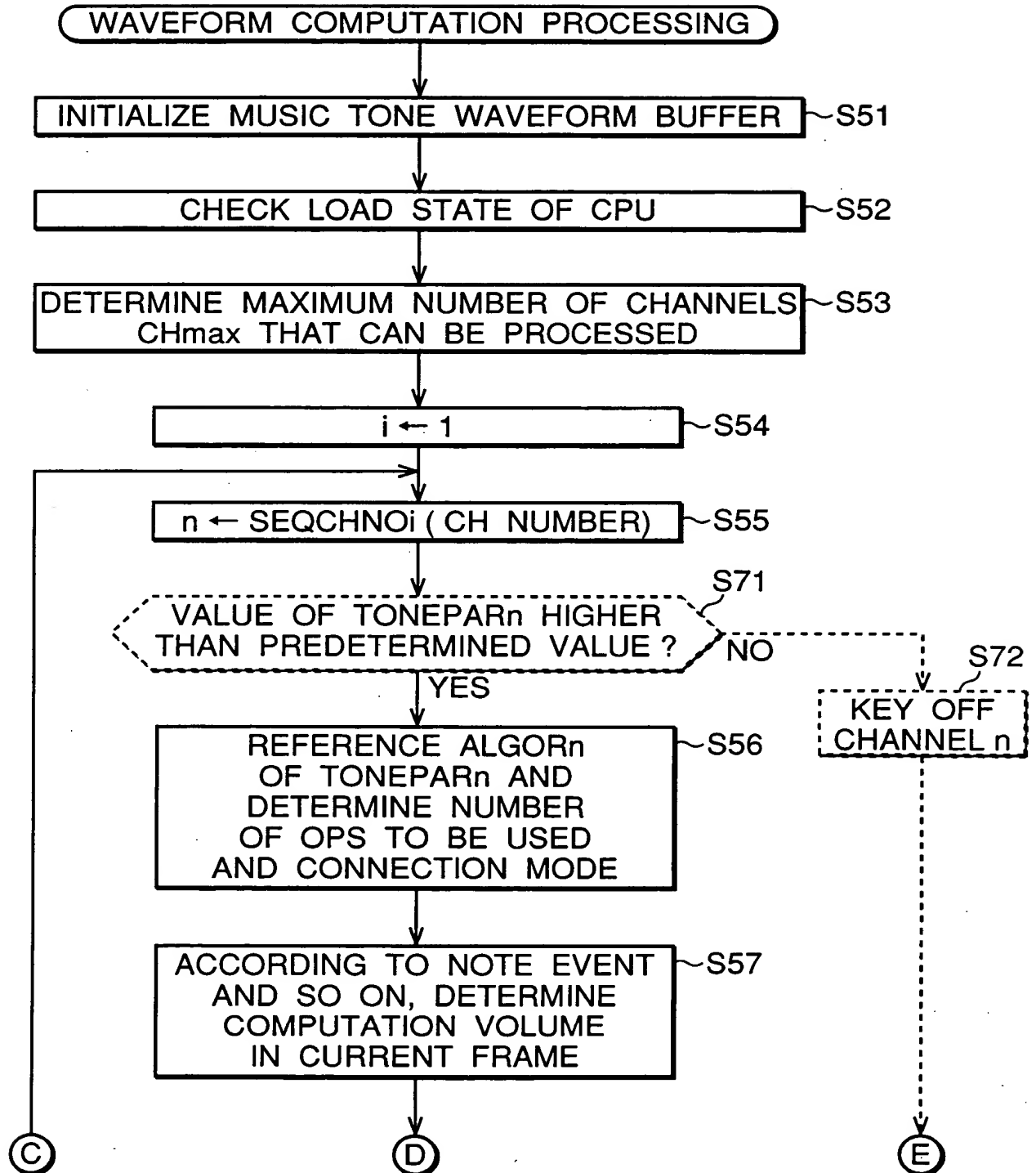
FIG.20



462201 462202 462203 462204 462205 462206 462207 462208 462209 462210 462211 462212 462213 462214 462215 462216 462217 462218 462219 462220 462221 462222 462223 462224 462225 462226 462227 462228 462229 462230 462231 462232 462233 462234 462235 462236 462237 462238 462239 462240 462241 462242 462243 462244 462245 462246 462247 462248 462249 462250 462251 462252 462253 462254 462255 462256 462257 462258 462259 462260 462261 462262 462263 462264 462265 462266 462267 462268 462269 462270 462271 462272 462273 462274 462275 462276 462277 462278 462279 462280 462281 462282 462283 462284 462285 462286 462287 462288 462289 462290 462291 462292 462293 462294 462295 462296 462297 462298 462299 462300 462301 462302 462303 462304 462305 462306 462307 462308 462309 462310 462311 462312 462313 462314 462315 462316 462317 462318 462319 462320 462321 462322 462323 462324 462325 462326 462327 462328 462329 462330 462331 462332 462333 462334 462335 462336 462337 462338 462339 462340 462341 462342 462343 462344 462345 462346 462347 462348 462349 462350 462351 462352 462353 462354 462355 462356 462357 462358 462359 462360 462361 462362 462363 462364 462365 462366 462367 462368 462369 462370 462371 462372 462373 462374 462375 462376 462377 462378 462379 462380 462381 462382 462383 462384 462385 462386 462387 462388 462389 462390 462391 462392 462393 462394 462395 462396 462397 462398 462399 462400 462401 462402 462403 462404 462405 462406 462407 462408 462409 462410 462411 462412 462413 462414 462415 462416 462417 462418 462419 462420 462421 462422 462423 462424 462425 462426 462427 462428 462429 462430 462431 462432 462433 462434 462435 462436 462437 462438 462439 462440 462441 462442 462443 462444 462445 462446 462447 462448 462449 462450 462451 462452 462453 462454 462455 462456 462457 462458 462459 462460 462461 462462 462463 462464 462465 462466 462467 462468 462469 462470 462471 462472 462473 462474 462475 462476 462477 462478 462479 462480 462481 462482 462483 462484 462485 462486 462487 462488 462489 462490 462491 462492 462493 462494 462495 462496 462497 462498 462499 462500 462501 462502 462503 462504 462505 462506 462507 462508 462509 462510 462511 462512 462513 462514 462515 462516 462517 462518 462519 462520 462521 462522 462523 462524 462525 462526 462527 462528 462529 462530 462531 462532 462533 462534 462535 462536 462537 462538 462539 462540 462541 462542 462543 462544 462545 462546 462547 462548 462549 462550 462551 462552 462553 462554 462555 462556 462557 462558 462559 462560 462561 462562 462563 462564 462565 462566 462567 462568 462569 462570 462571 462572 462573 462574 462575 462576 462577 462578 462579 462580 462581 462582 462583 462584 462585 462586 462587 462588 462589 462590 462591 462592 462593 462594 462595 462596 462597 462598 462599 462600 462601 462602 462603 462604 462605 462606 462607 462608 462609 462610 462611 462612 462613 462614 462615 462616 462617 462618 462619 462620 462621 462622 462623 462624 462625 462626 462627 462628 462629 462630 462631 462632 462633 462634 462635 462636 462637 462638 462639 462640 462641 462642 462643 462644 462645 462646 462647 462648 462649 462650 462651 462652 462653 462654 462655 462656 462657 462658 462659 462660 462661 462662 462663 462664 462665 462666 462667 462668 462669 462670 462671 462672 462673 462674 462675 462676 462677 462678 462679 462680 462681 462682 462683 462684 462685 462686 462687 462688 462689 462690 462691 462692 462693 462694 462695 462696 462697 462698 462699 462700 462701 462702 462703 462704 462705 462706 462707 462708 462709 462710 462711 462712 462713 462714 462715 462716 462717 462718 462719 462720 462721 462722 462723 462724 462725 462726 462727 462728 462729 462730 462731 462732 462733 462734 462735 462736 462737 462738 462739 462740 462741 462742 462743 462744 462745 462746 462747 462748 462749 462750 462751 462752 462753 462754 462755 462756 462757 462758 462759 462760 462761 462762 462763 462764 462765 462766 462767 462768 462769 462770 462771 462772 462773 462774 462775 462776 462777 462778 462779 462780 462781 462782 462783 462784 462785 462786 462787 462788 462789 462790 462791 462792 462793 462794 462795 462796 462797 462798 462799 462800 462801 462802 462803 462804 462805 462806 462807 462808 462809 462810 462811 462812 462813 462814 462815 462816 462817 462818 462819 462820 462821 462822 462823 462824 462825 462826 462827 462828 462829 462830 462831 462832 462833 462834 462835 462836 462837 462838 462839 462840 462841 462842 462843 462844 462845 462846 462847 462848 462849 462850 462851 462852 462853 462854 462855 462856 462857 462858 462859 462860 462861 462862 462863 462864 462865 462866 462867 462868 462869 462870 462871 462872 462873 462874 462875 462876 462877 462878 462879 462880 462881 462882 462883 462884 462885 462886 462887 462888 462889 462890 462891 462892 462893 462894 462895 462896 462897 462898 462899 462900 462901 462902 462903 462904 462905 462906 462907 462908 462909 462910 462911 462912 462913 462914 462915 462916 462917 462918 462919 462920 462921 462922 462923 462924 462925 462926 462927 462928 462929 462930 462931 462932 462933 462934 462935 462936 462937 462938 462939 462940 462941 462942 462943 462944 462945 462946 462947 462948 462949 462950 462951 462952 462953 462954 462955 462956 462957 462958 462959 462960 462961 462962 462963 462964 462965 462966 462967 462968 462969 462970 462971 462972 462973 462974 462975 462976 462977 462978 462979 462980 462981 462982 462983 462984 462985 462986 462987 462988 462989 462990 462991 462992 462993 462994 462995 462996 462997 462998 462999 463000

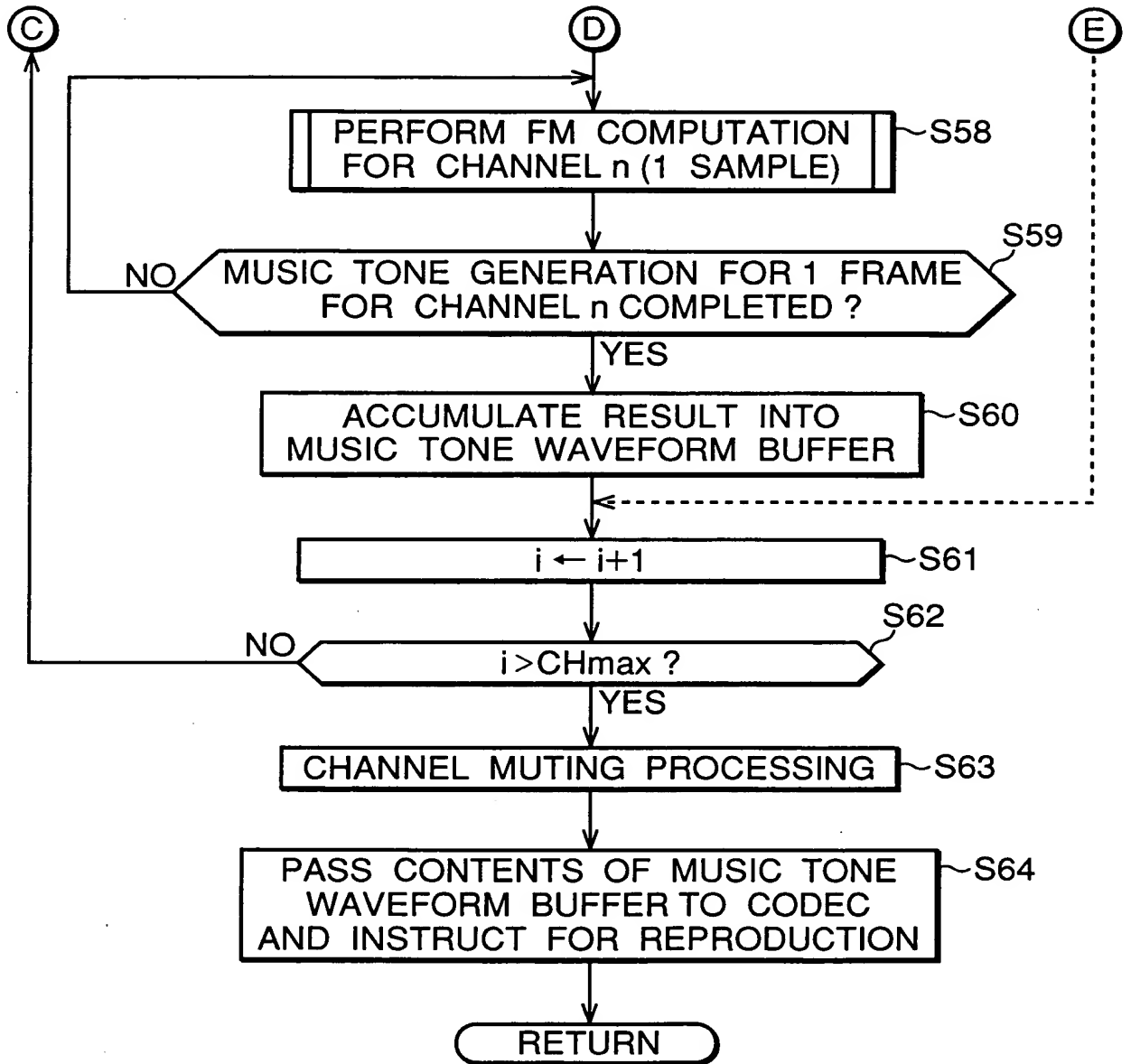
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FIG.14



46230 46230

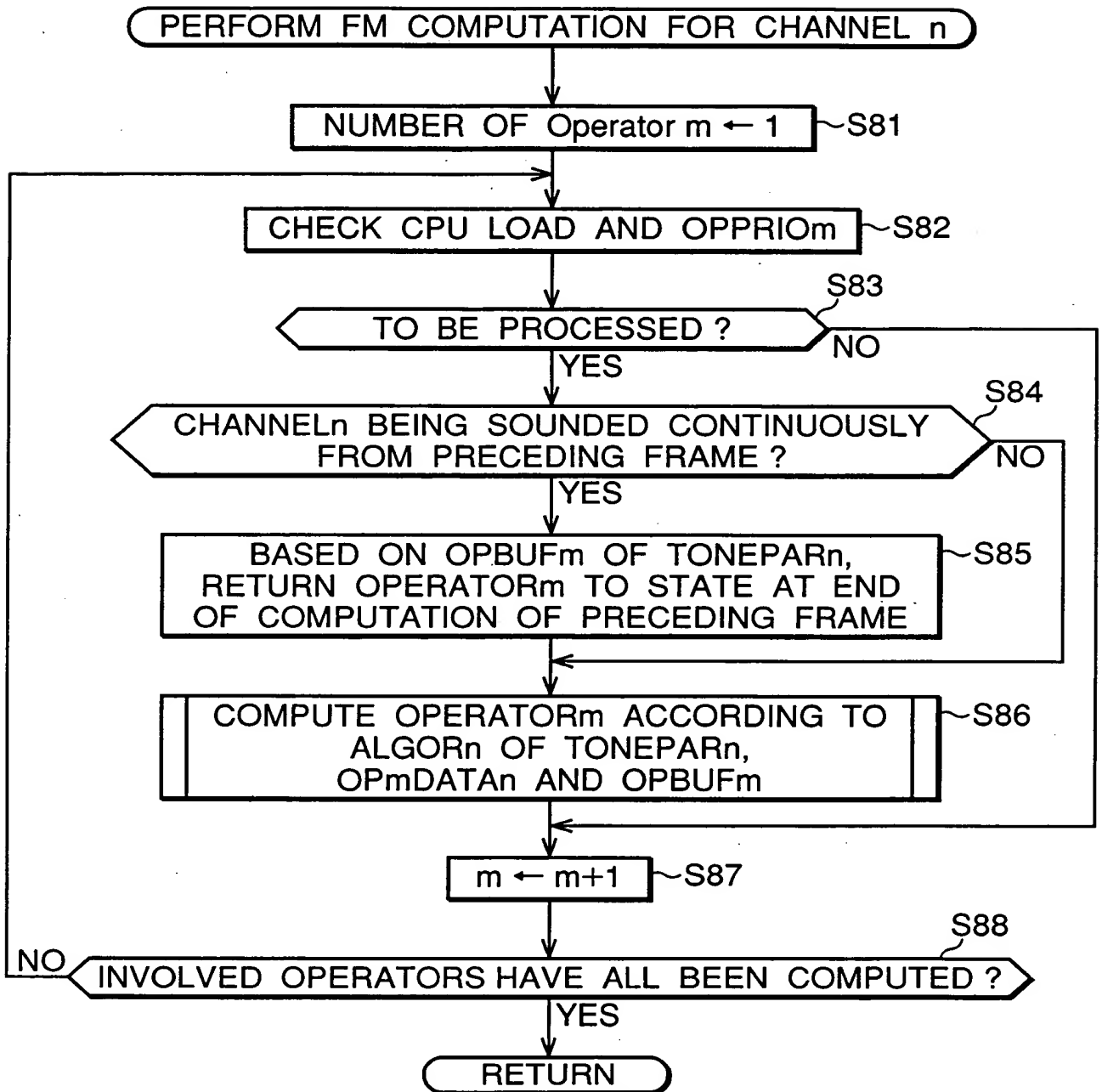
FIG.15



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.16



46280 4760280

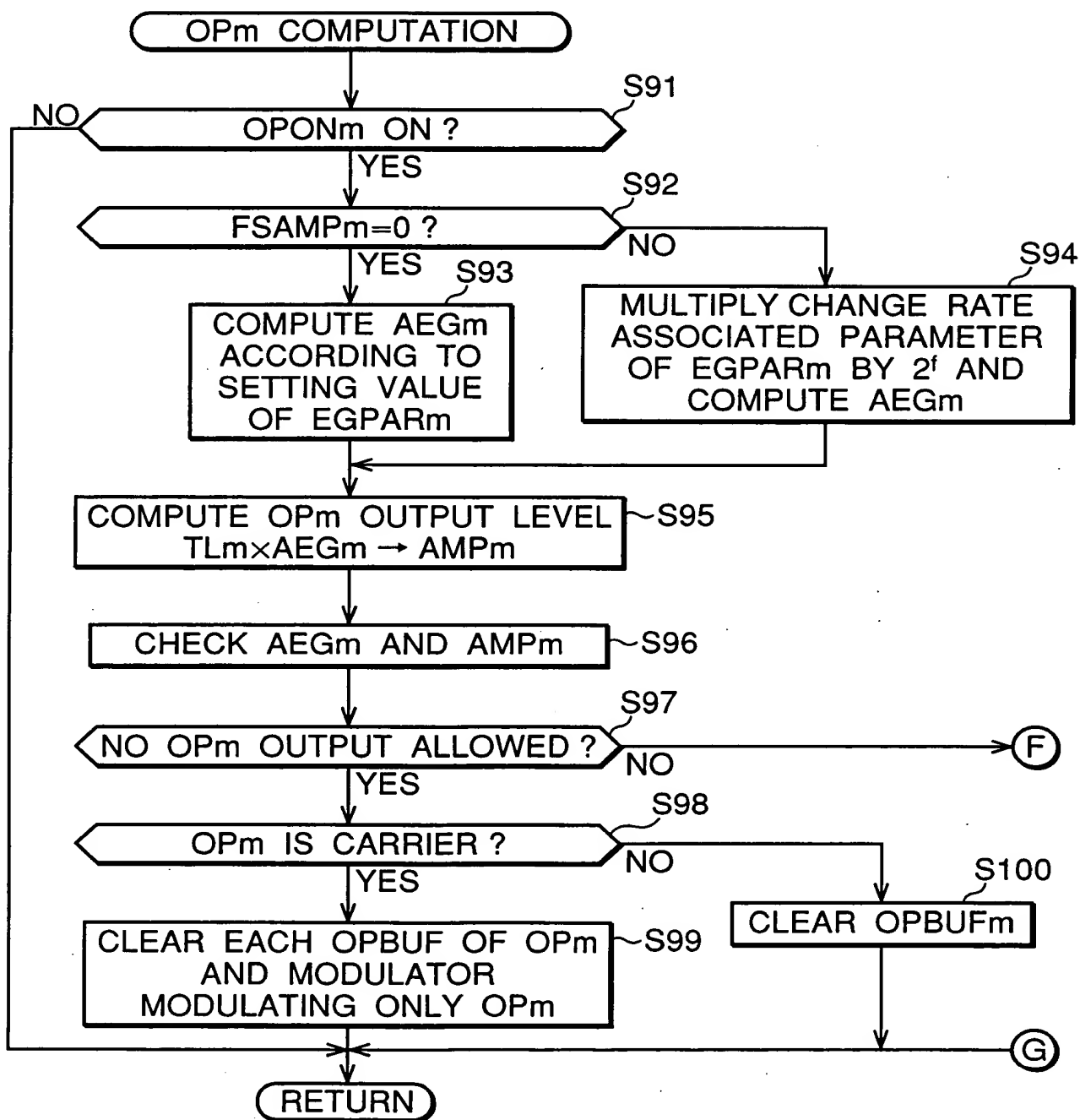
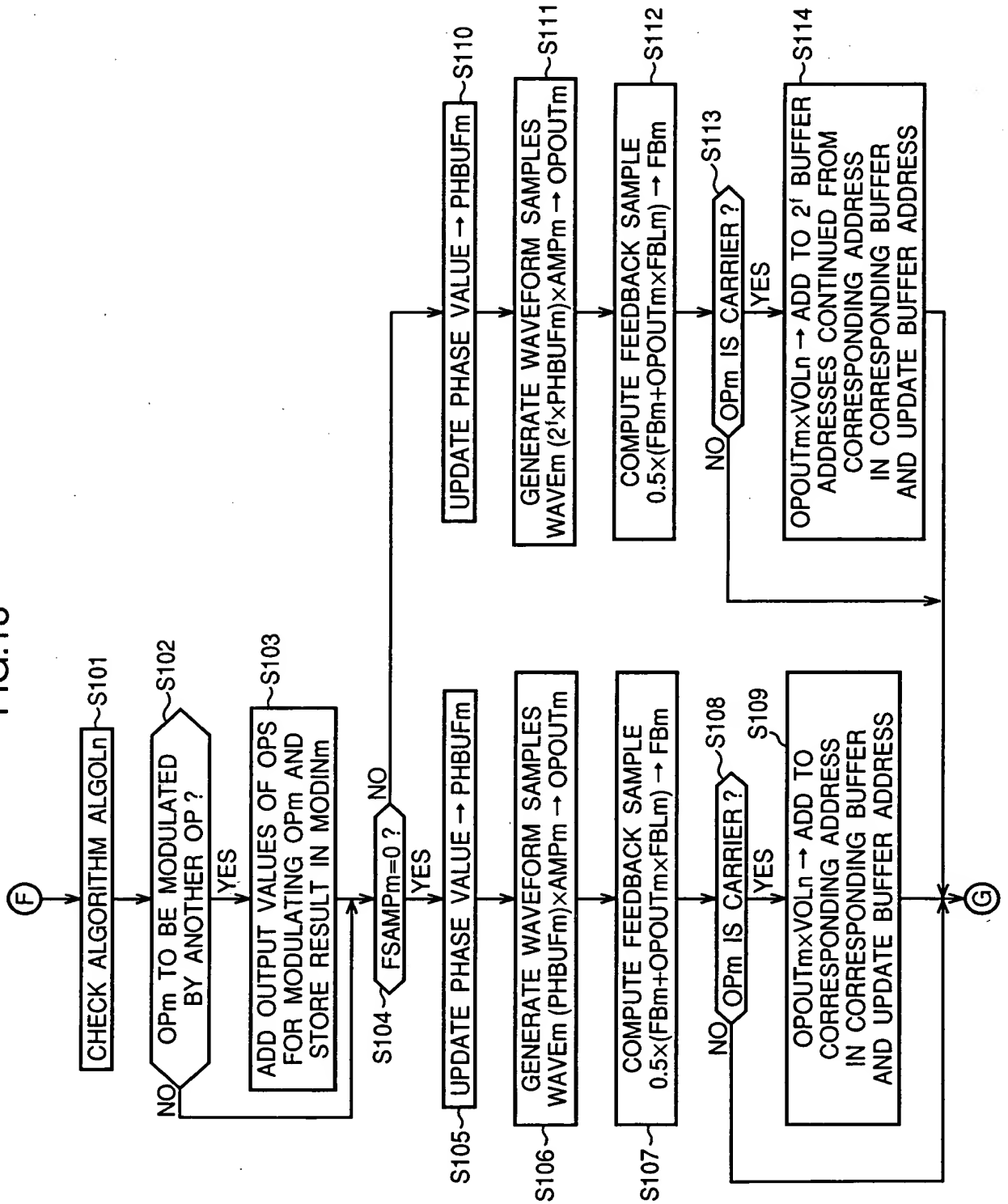


FIG.18



The diagram is divided into two main functional blocks: **PHASE COMPUTATION** and **AEGm COMPUTATION**.

PHASE COMPUTATION: This section is enclosed in a dashed box. It takes **MODINm** and **FBm** as inputs. **MODINm** is multiplied by **FNOm** (indicated by a circled 'X'). The result is then added to **FBm** (indicated by a circle with a '+'). The output of this addition is stored in **PHBUFm**. **PHBUFm** is then shifted by **f** bits (indicated by a box labeled 'SHIFT BY f BITS'). The output of the shift is **FSAMPm**.

AEGm COMPUTATION: This section takes **EGPARm, TLm** as input. **EGPARm** is processed by a **COMPUTE AEG** block, which also receives **FSAMPm** from the Phase Computation section. The output of **COMPUTE AEG** is **AEGm**. **AEGm** is then multiplied by **TLm** (indicated by a circled 'X'). The result is added to **OPOUTm** (indicated by a circle with a '+'). The output of this addition is **WAVEFORM BUFFER**. **WAVEFORM BUFFER** is then used to generate **SELECT WAVEFORM**, which is input to a **BASIC WAVEFORM TABLE**. The output of the table is **WSELm**. **WSELm** is multiplied by **FBLm** (indicated by a circled 'X'). The result is then added to **FBm (UPDATED VALUE)** (indicated by a circle with a '+'). The output of this addition is **FEEDBACK SAMPLE COMPUTATION**.

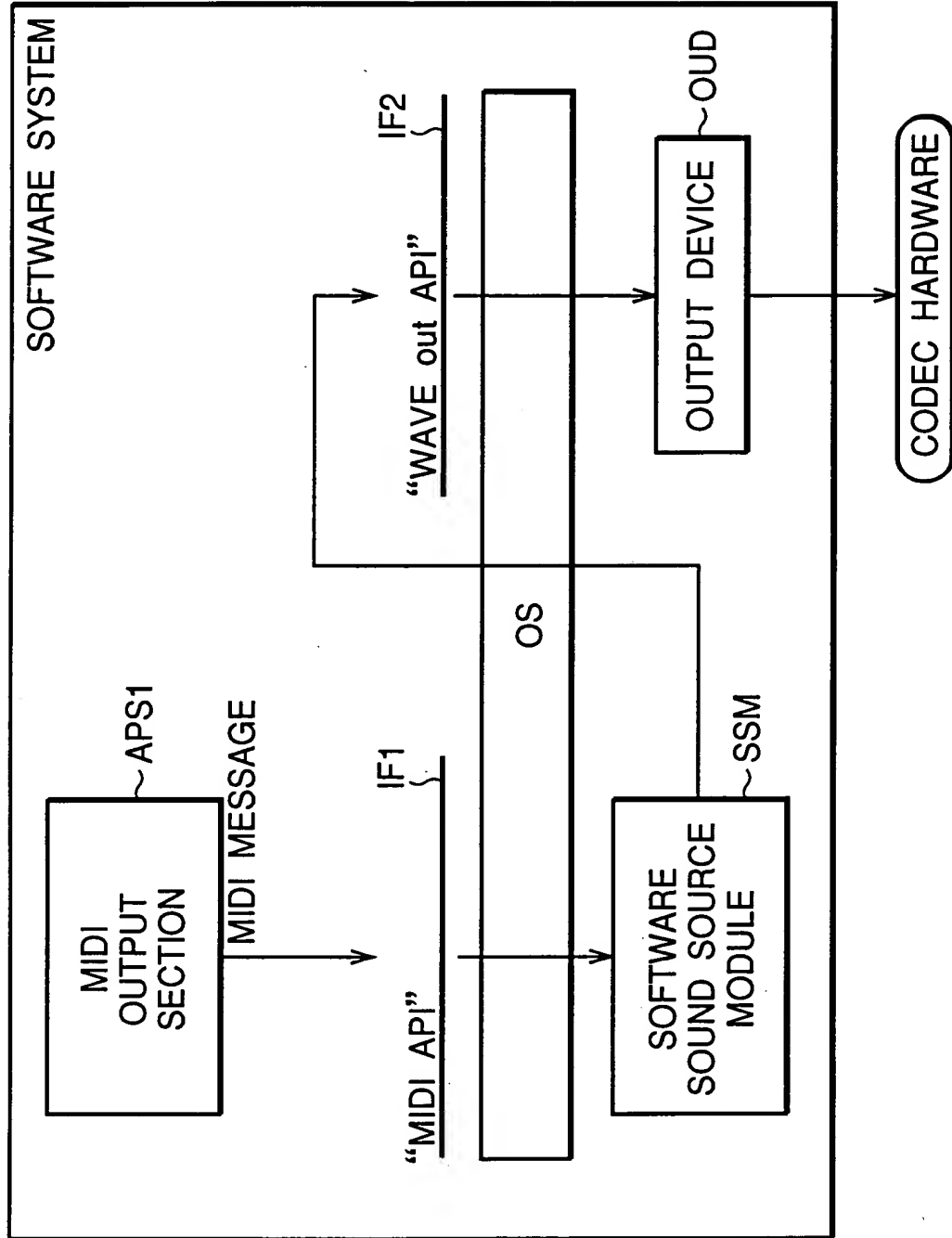
Additional Information: A note at the bottom right states: "IF OPm IS CARRIER, MULTIPLY VOLn".

**ADD OPOUT_m TO 2^f CORRESPONDING
CONTINUOUS BUFFER ADDRESSES**

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.21



466280 44602680

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.22

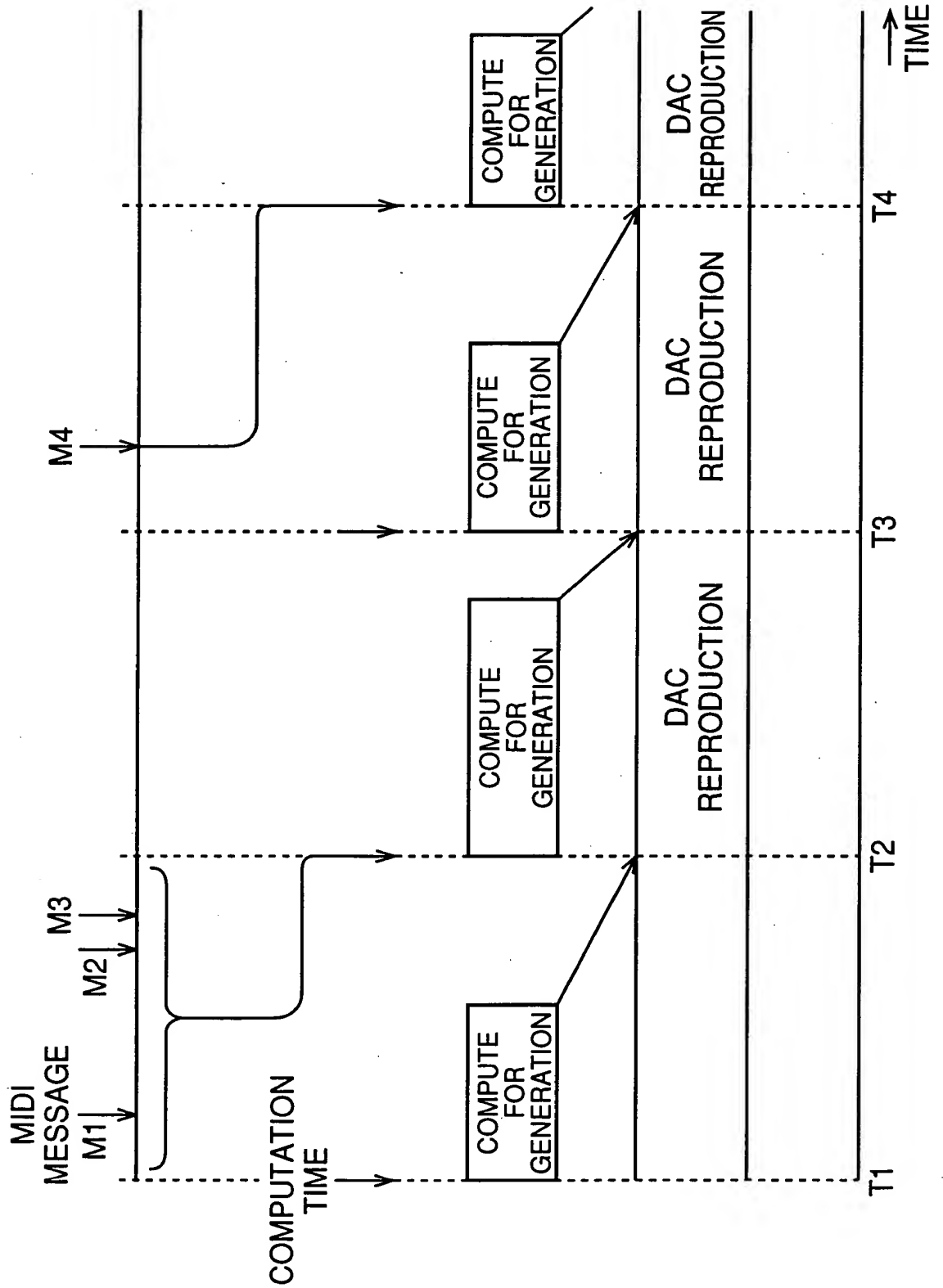
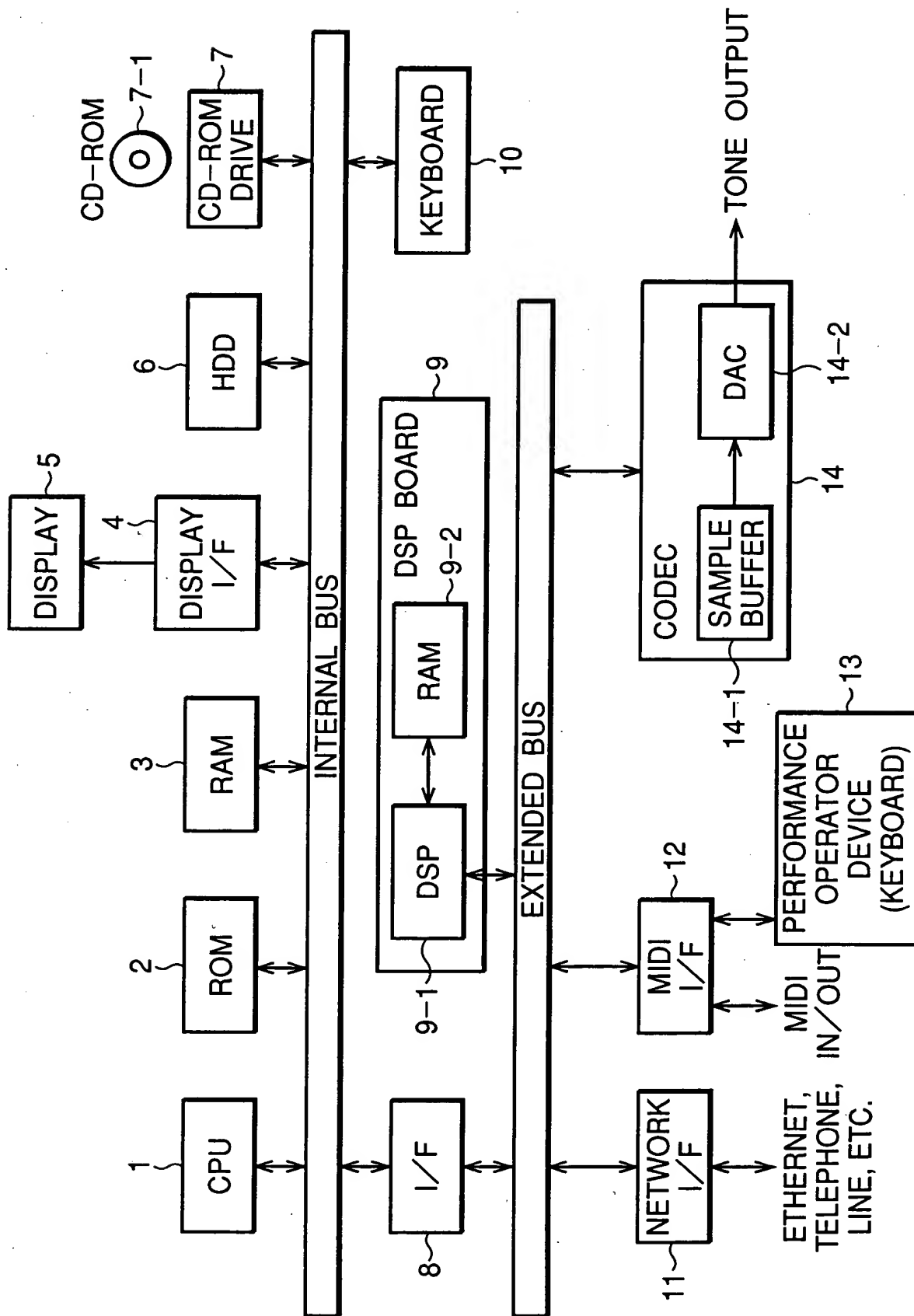


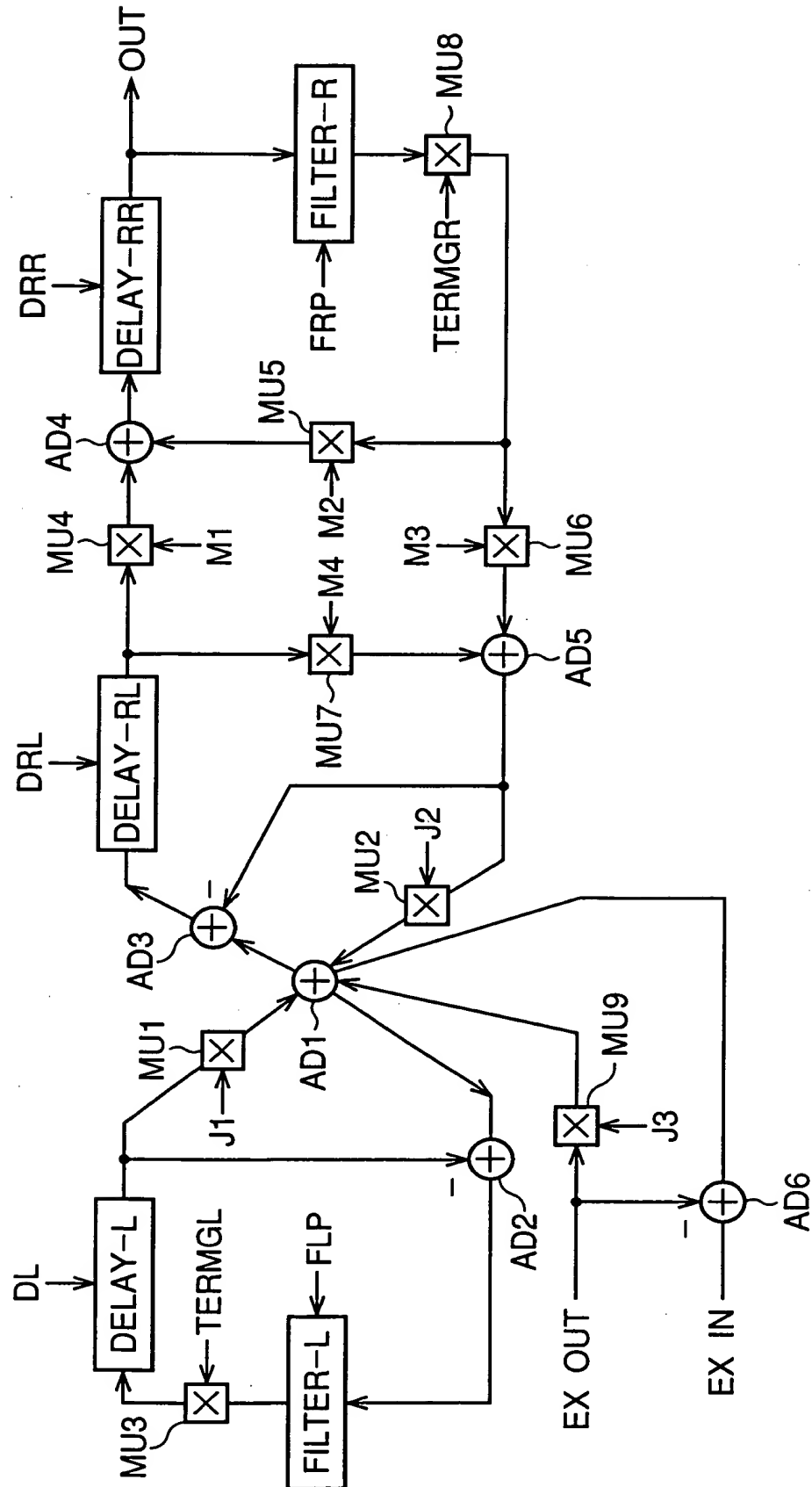
FIG.23



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.24



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.25

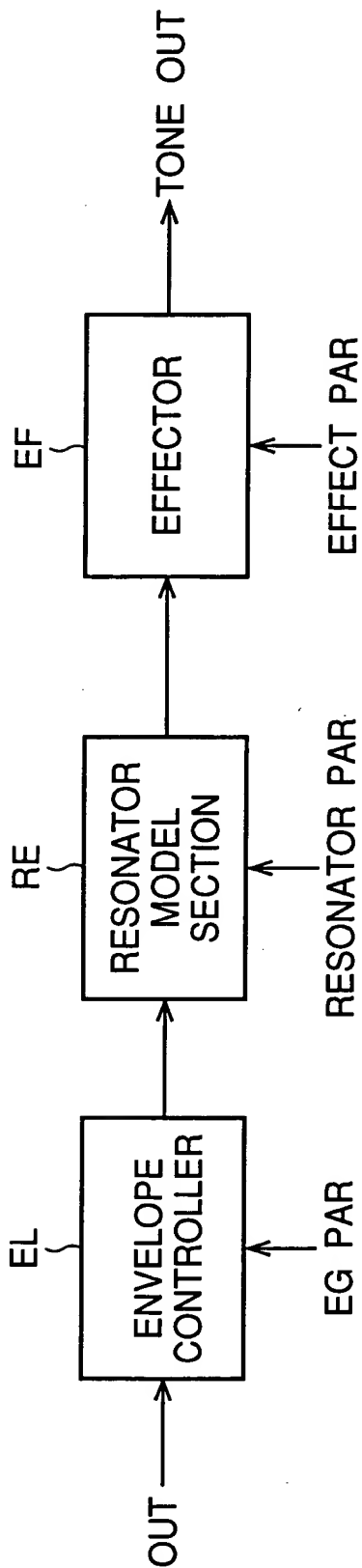
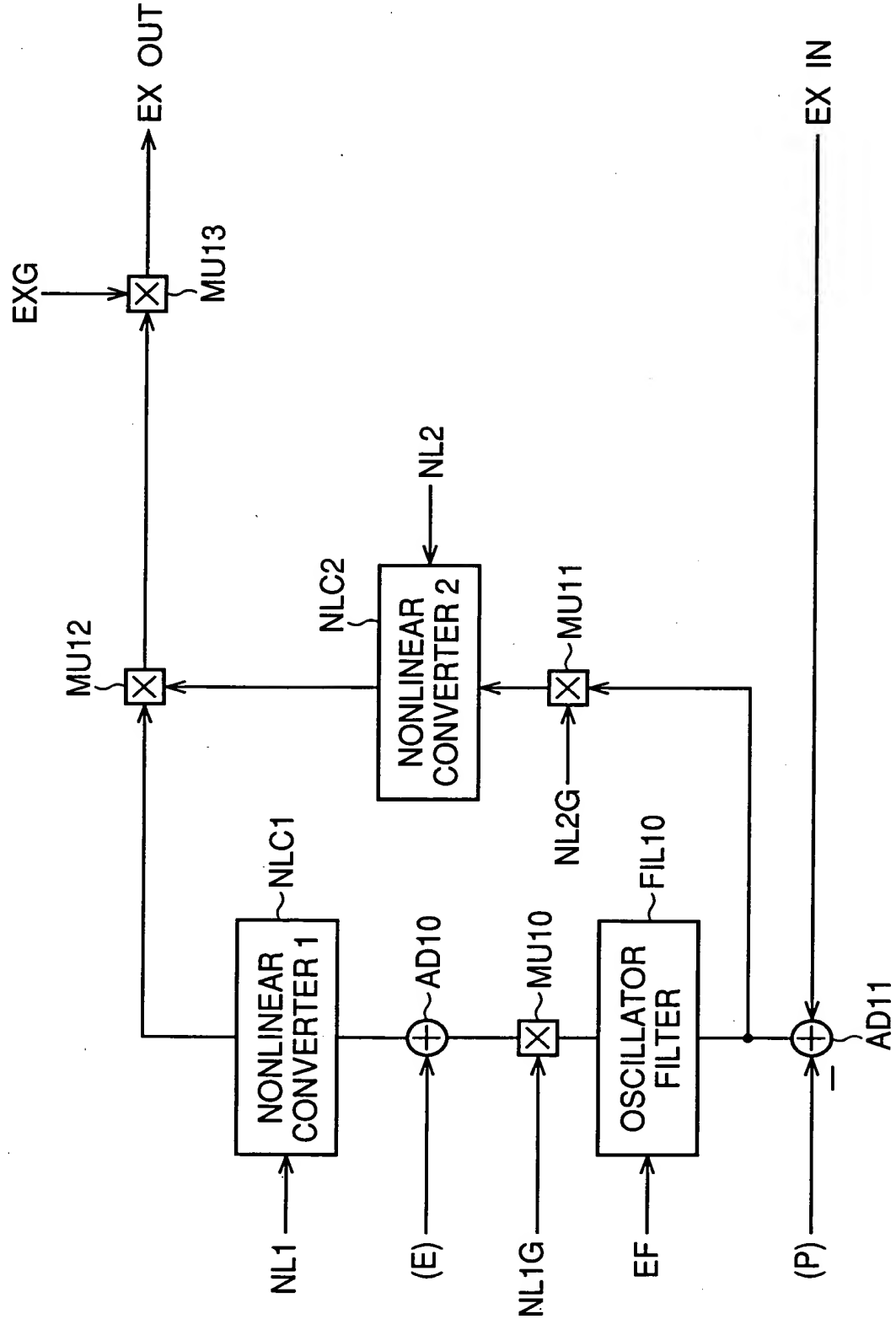


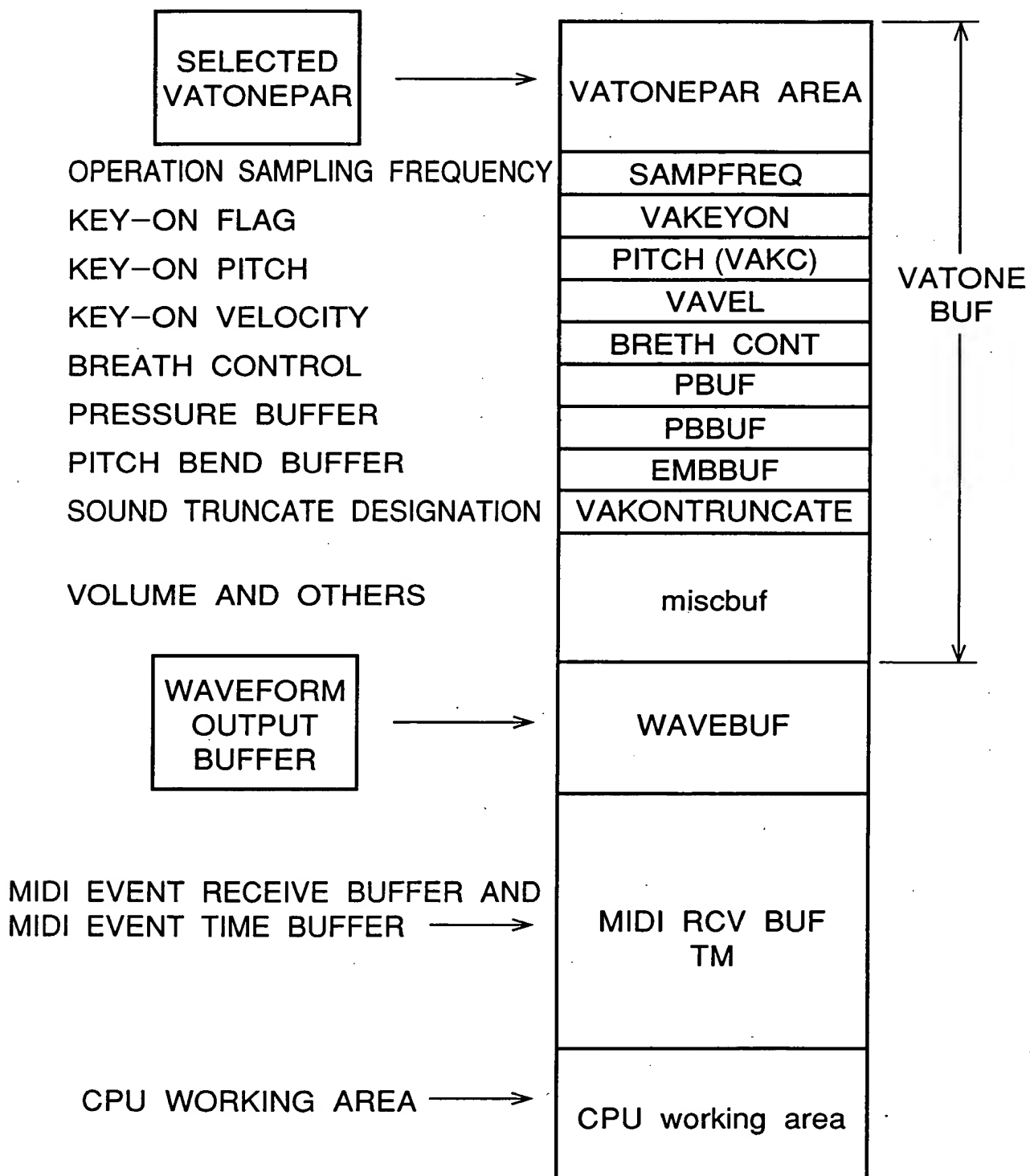
FIG.26



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.27



46230 4602680

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

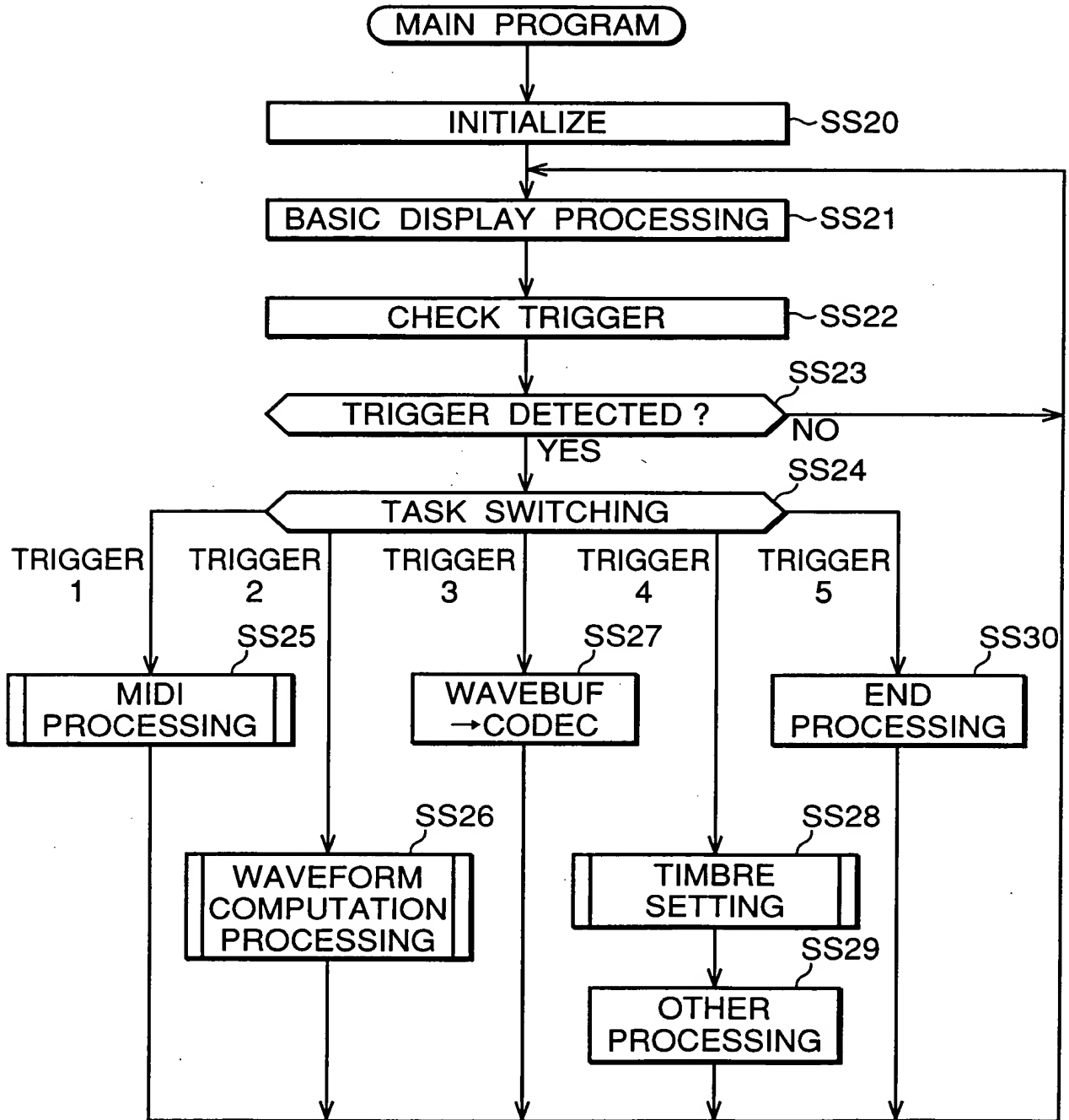
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FIG.28

EXCITER PARAMETERS	EF	EXCITER FILTER PARAMETER
	NLG1	NONLINEAR CONVERTER 1 INPUT GAIN
	NLG2	NONLINEAR CONVERTER 2 INPUT GAIN
	EXG	EXCITER OUTPUT GAIN
	NL1	NONLINEAR CONVERTER 1 CHARACTERISTIC PARAMETER (TABLE)
	NL2	NONLINEAR CONVERTER 2 CHARACTERISTIC PARAMETER (TABLE)
P/S PARAMETERS	DL	DELAY-L DELAY AMOUNT TABLE
	DRL	DELAY-RL DELAY AMOUNT TABLE
	DRR	DELAY-RR DELAY AMOUNT TABLE
	FLP	TERMINAL FILTER-L PARAMETER
	FRP	TERMINAL FILTER-R PARAMETER
	MULTI1(M1)	TONE HOLE JUNCTION MULTIPLICATION COEFFICIENT 1
	MULTI2(M2)	TONE HOLE JUNCTION MULTIPLICATION COEFFICIENT 2
	MULTI3(M3)	TONE HOLE JUNCTION MULTIPLICATION COEFFICIENT 3
	MULTI4(M4)	TONE HOLE JUNCTION MULTIPLICATION COEFFICIENT 4
	J1	TUBE JUNCTION MULTIPLICATION COEFFICIENT 1
	J2	TUBE JUNCTION MULTIPLICATION COEFFICIENT 2
	J3	TUBE JUNCTION MULTIPLICATION COEFFICIENT 3
EG PAR	ATTACK RATE	ATTACK RATE
	RELEASE RATE	RELEASE RATE
	↓	↓
RESONATOR PAR	TYPE	RESONATOR TYPE
	FREQ	RESONATOR FREQUENCY CHARACTERISTIC PARAMETER
	LEVEL	RESONATOR LEVEL PARAMETER
	↓	↓
EFFECT PAR	EFFECT TYPE	EFFECT TYPE DESIGNATION
	FREQ	EFFECT DEPTH
	LEVEL	MODULATION SPEED
	↓	↓
SAMPLING FREQ	FS	SAMPLING FREQUENCY DATA (FS1>FS2)

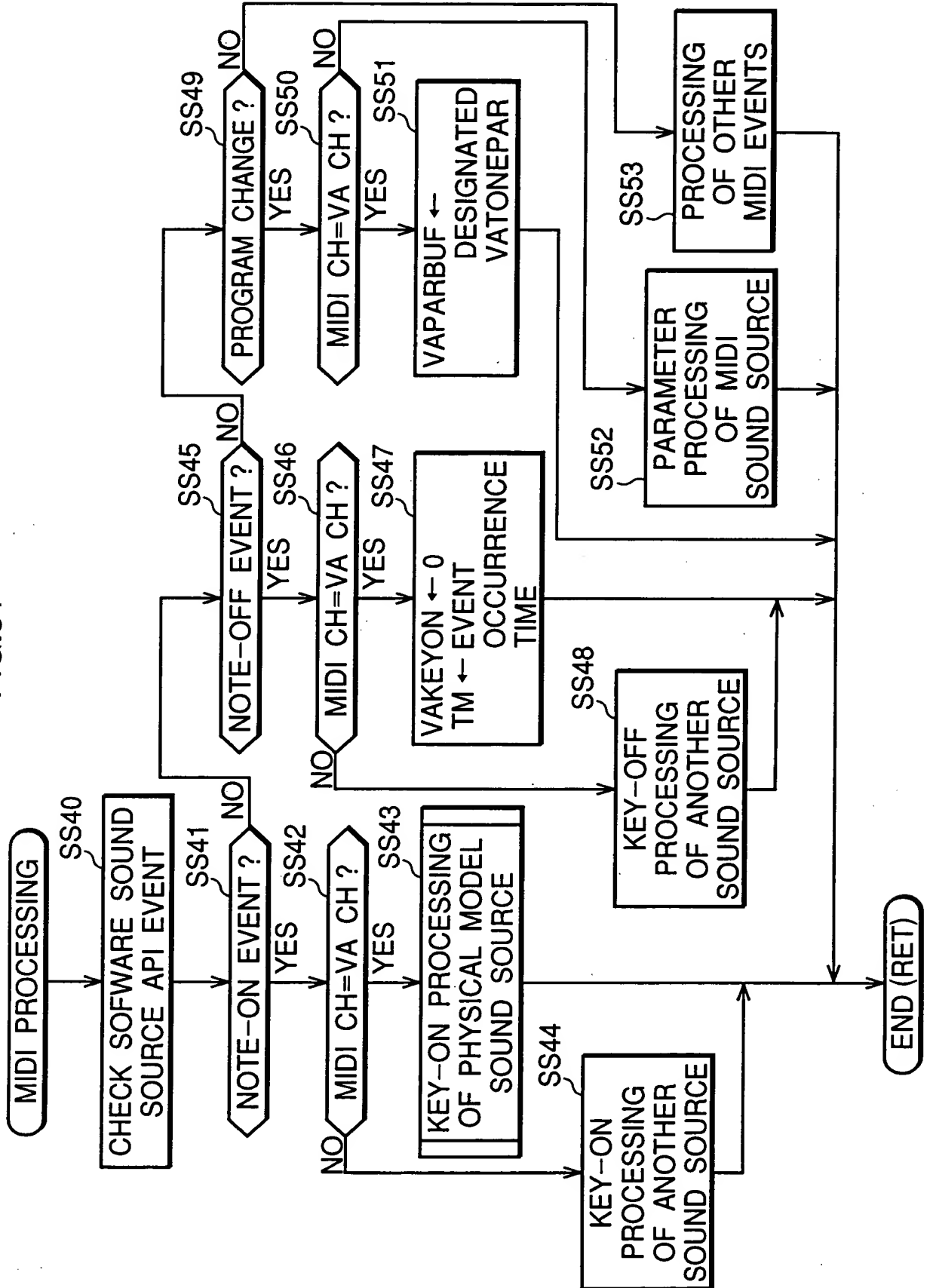
46230-46230

FIG.30



45280 41502680

FIG.31



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.32A

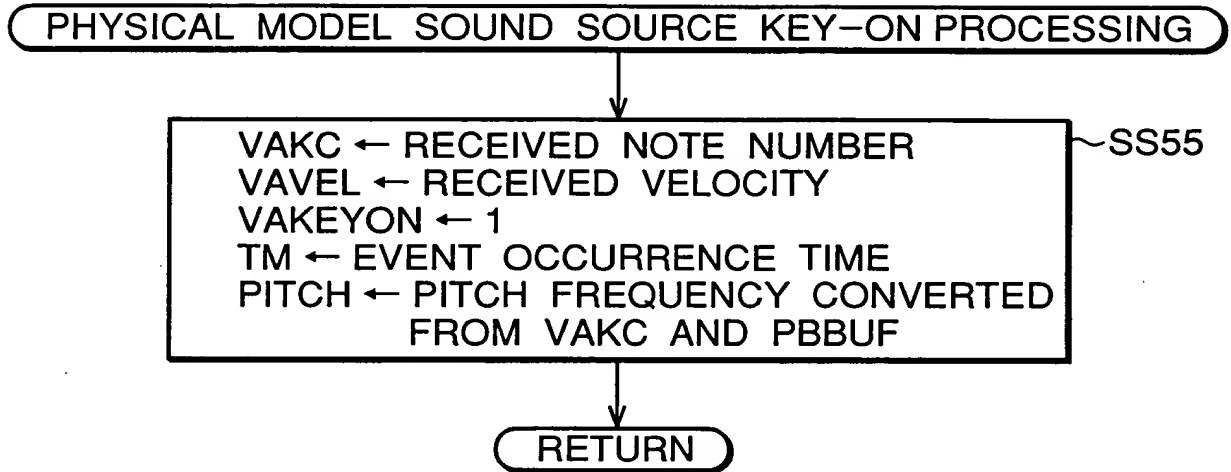
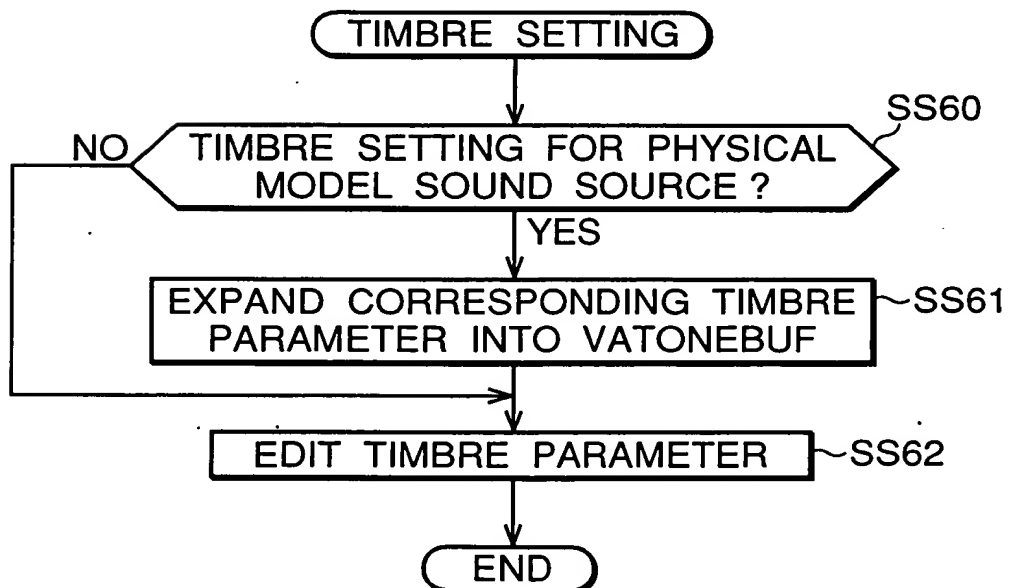


FIG.32B



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FIG.32C

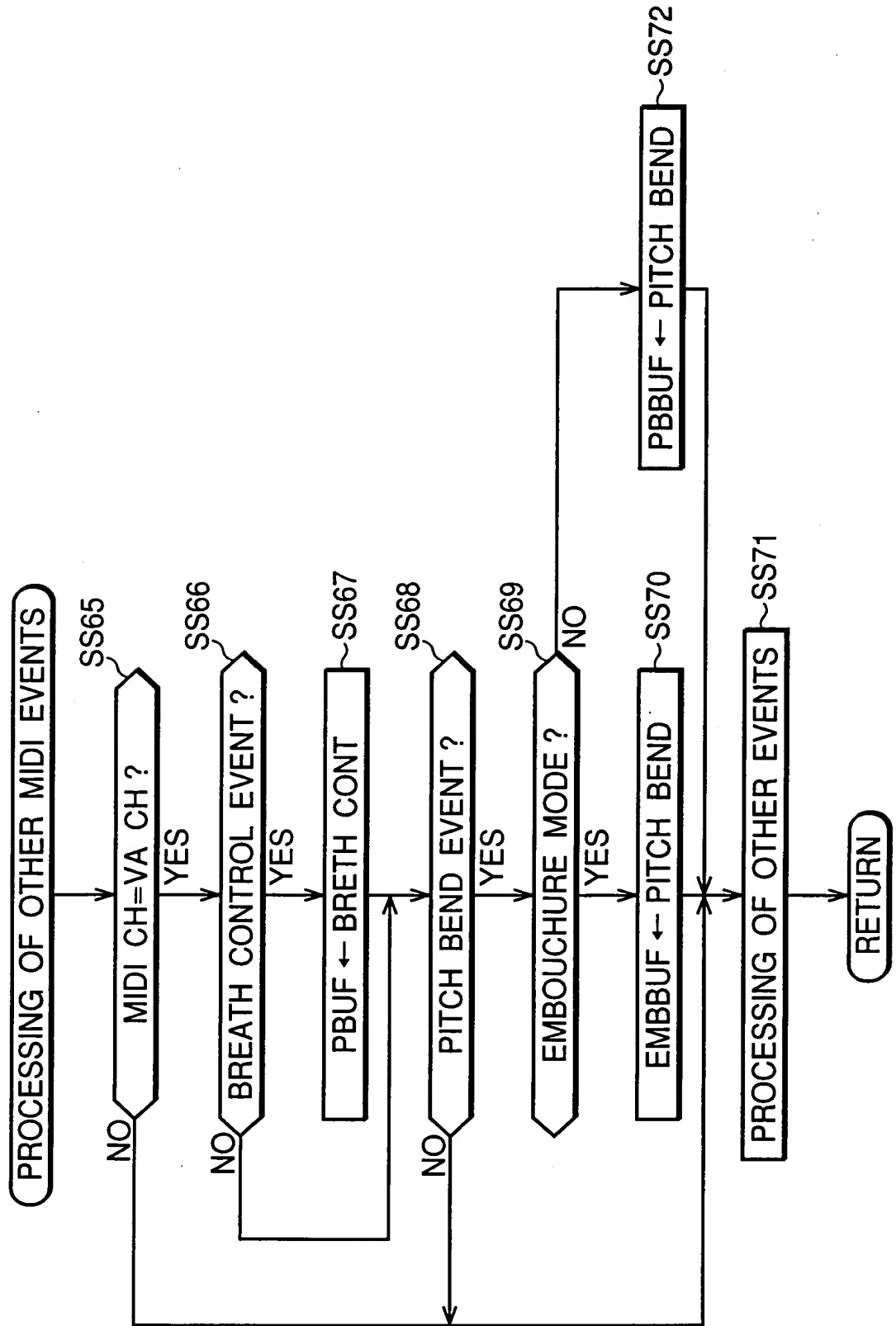


FIG.33

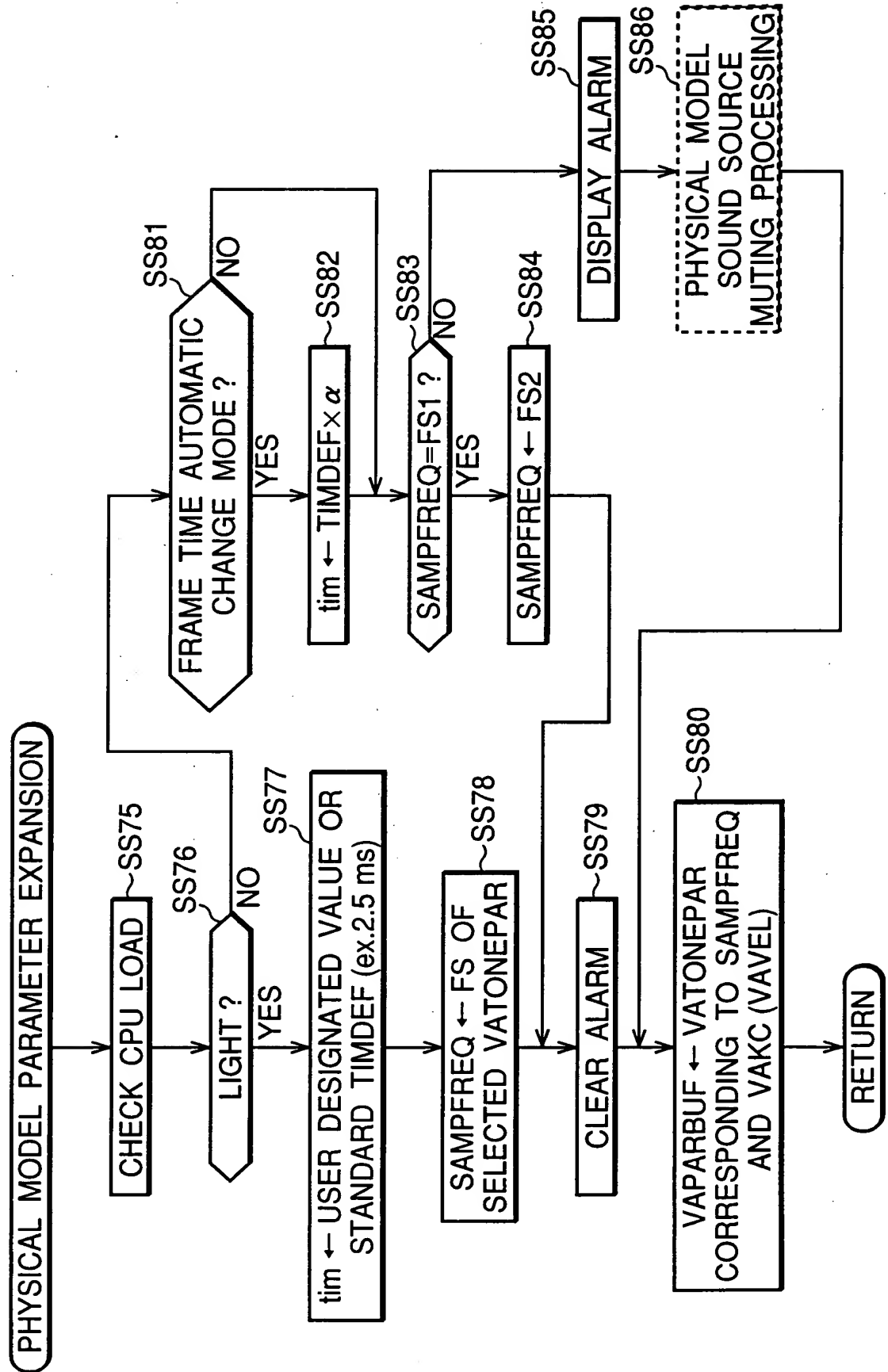
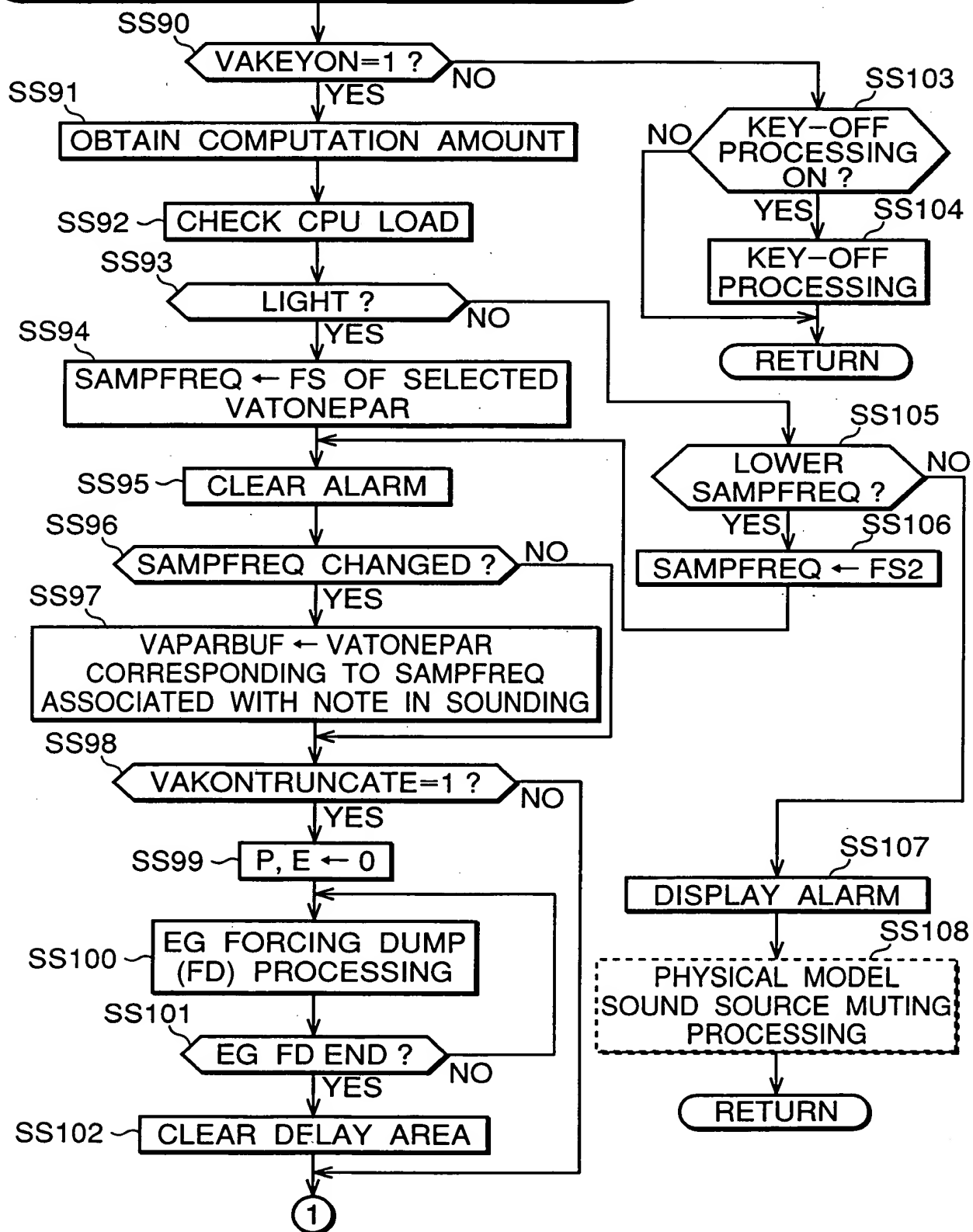


FIG.34

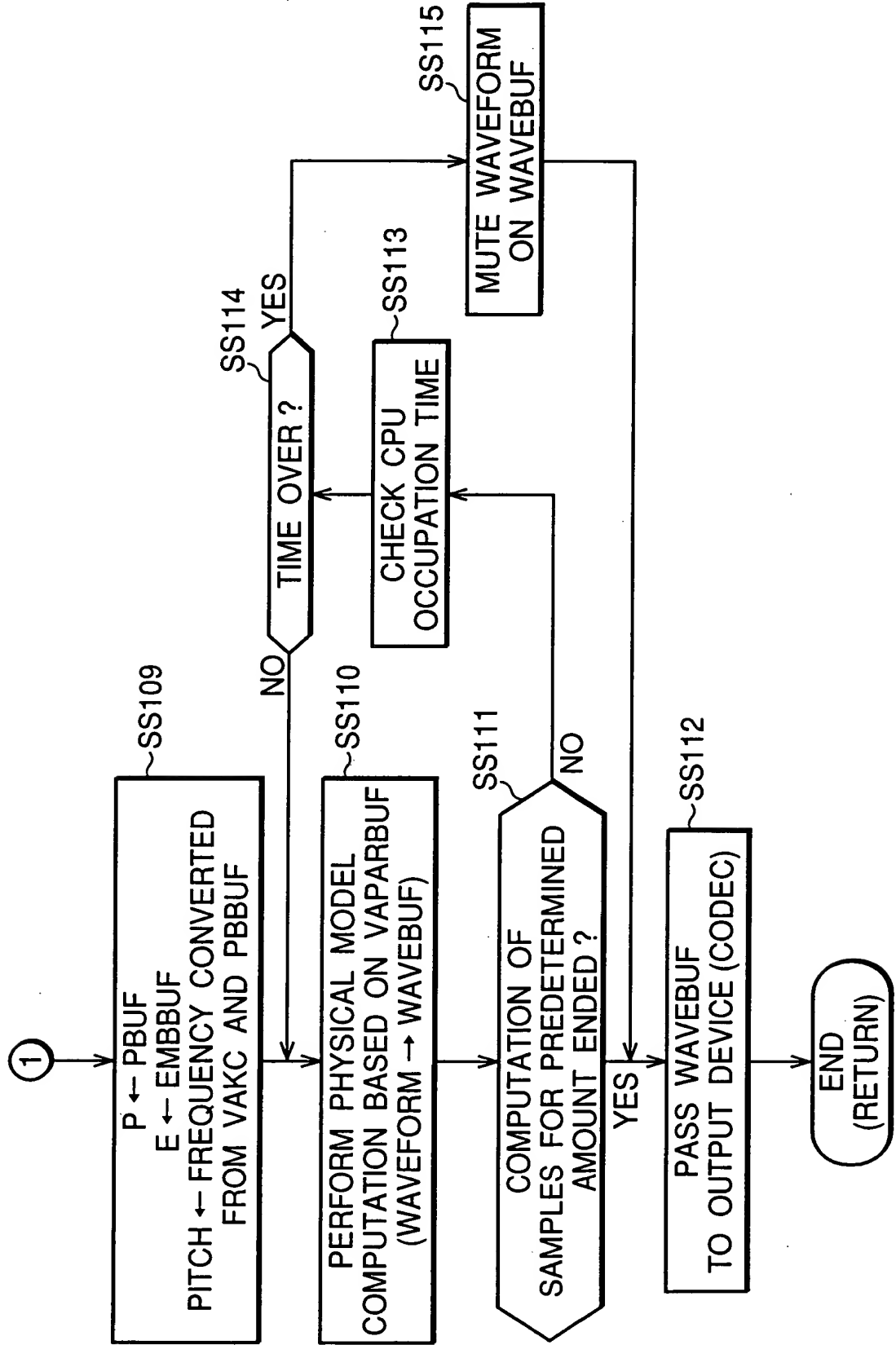
WAVEFORM GENERATION PROCESSING
(PHYSICAL MODEL SOUND SOURCE)



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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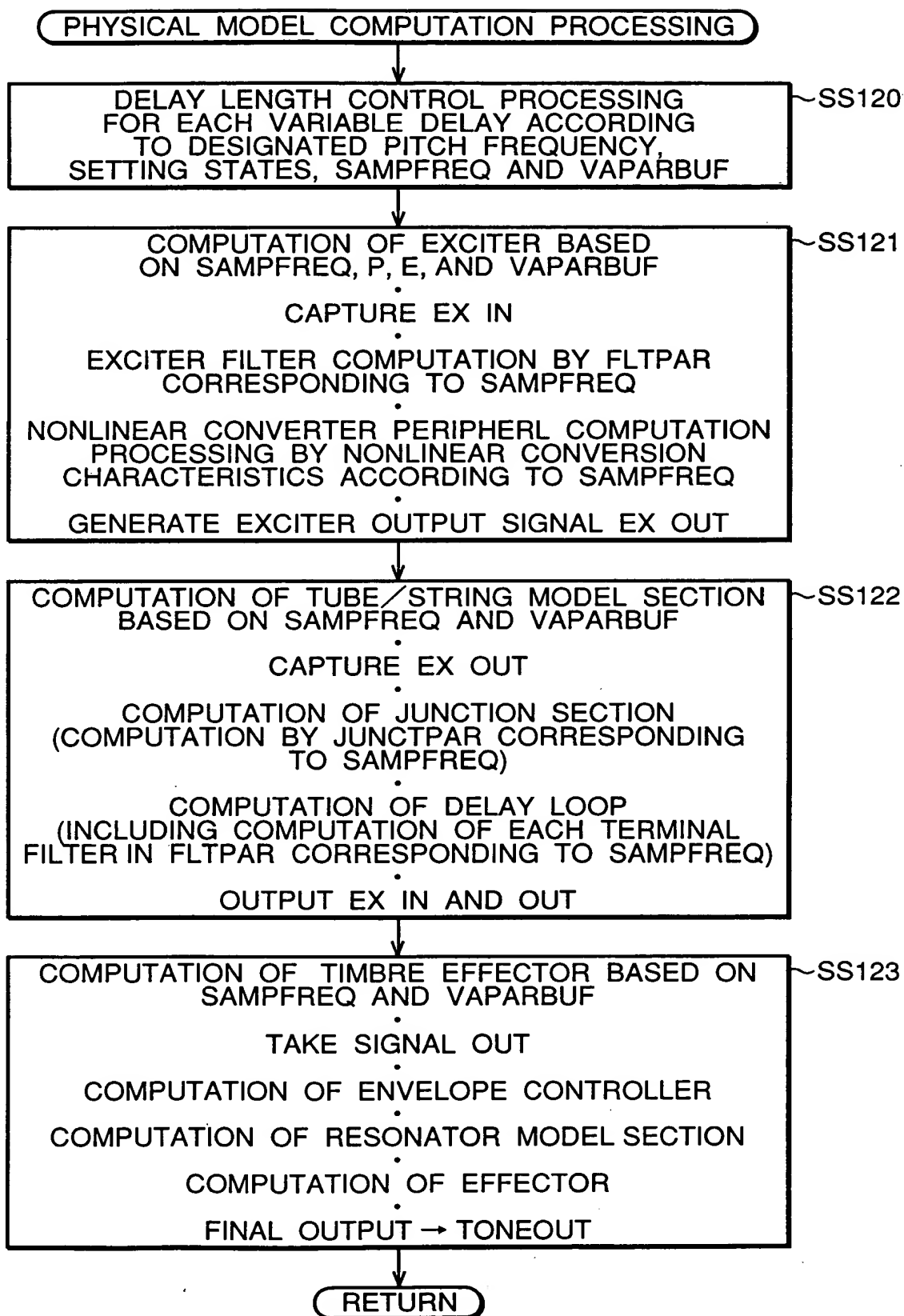
FIG.35



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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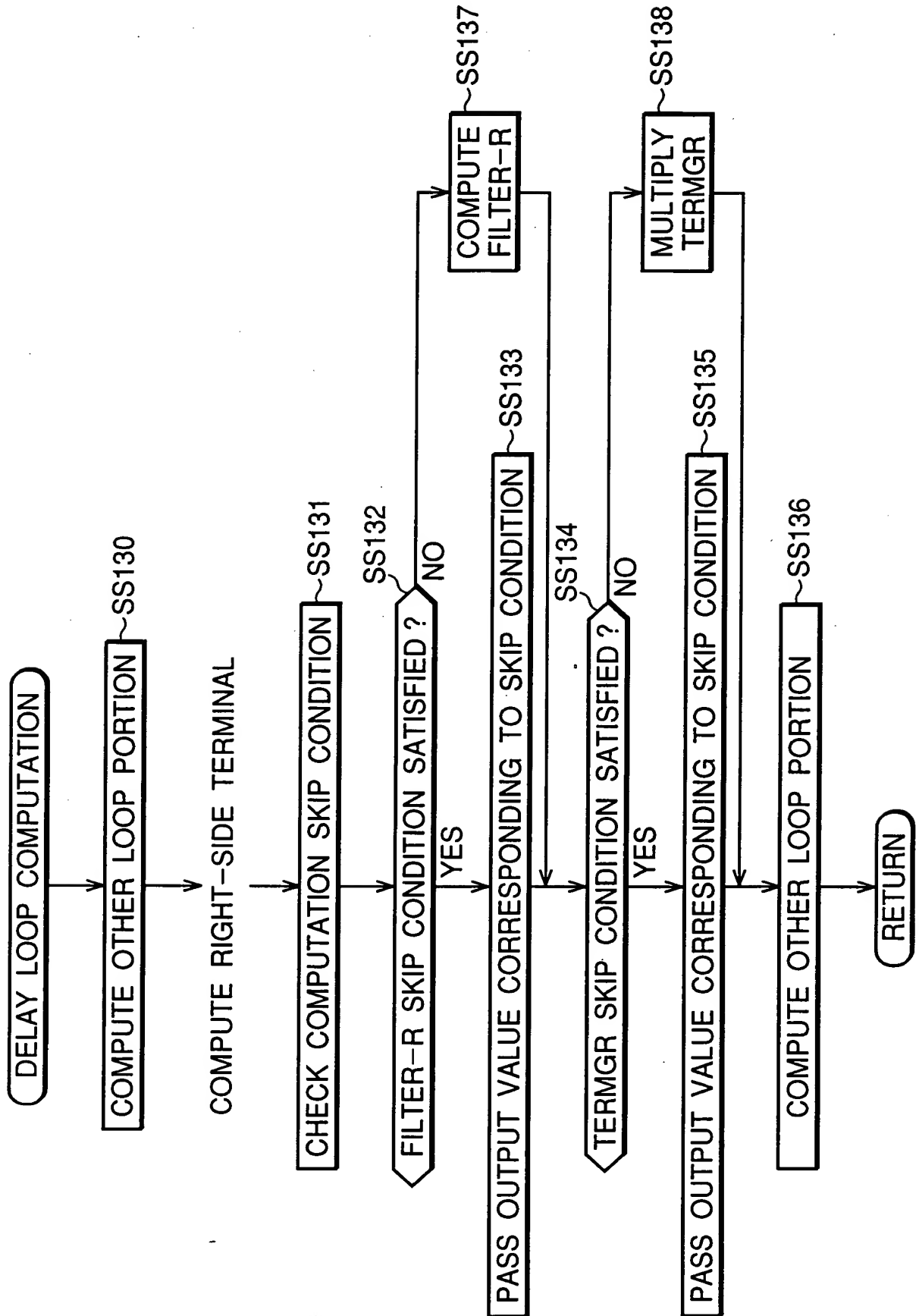
FIG.36



46220 24602680

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG.37



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.38

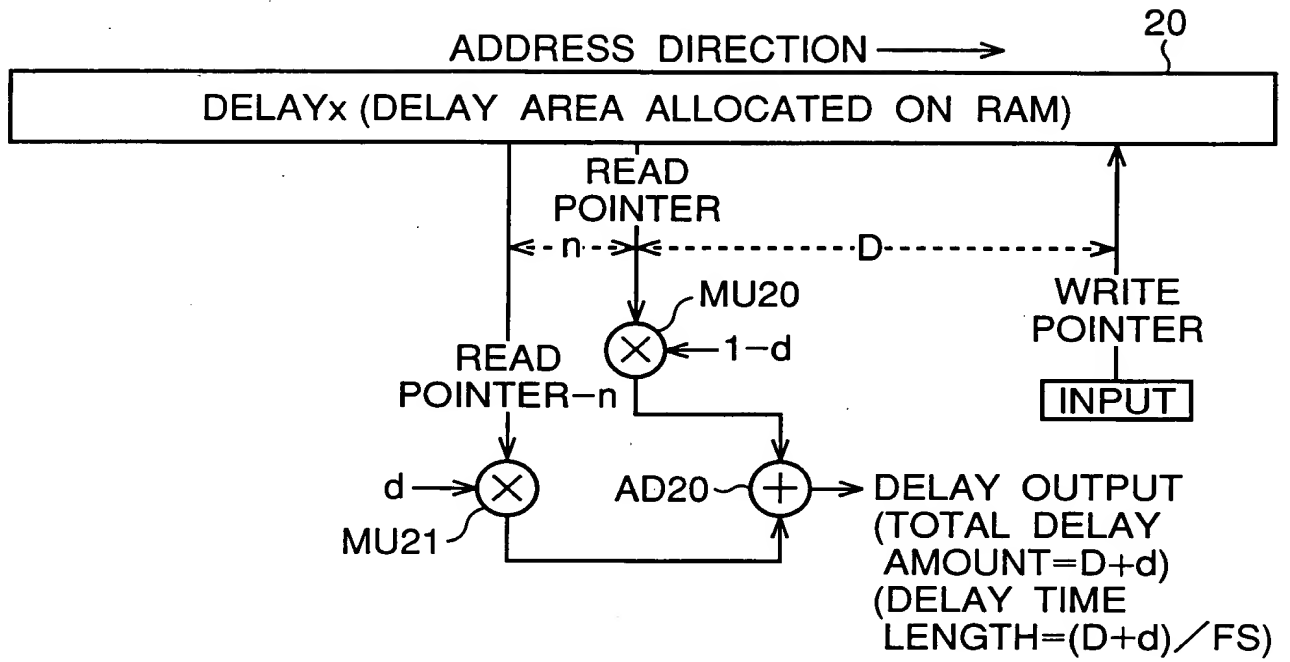
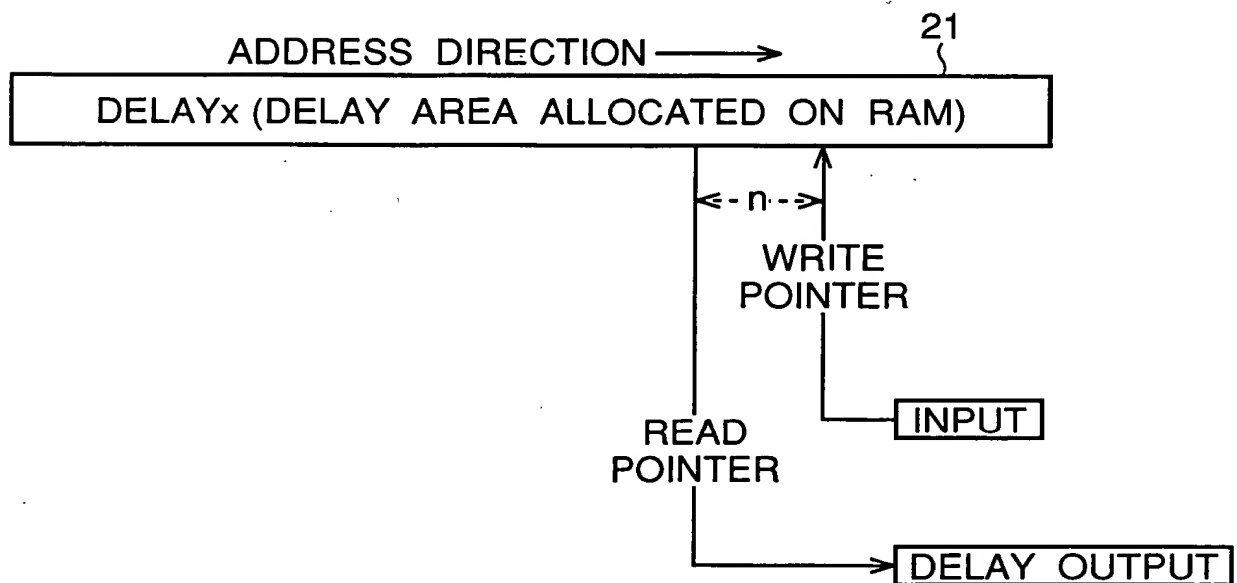


FIG.39



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APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.40A

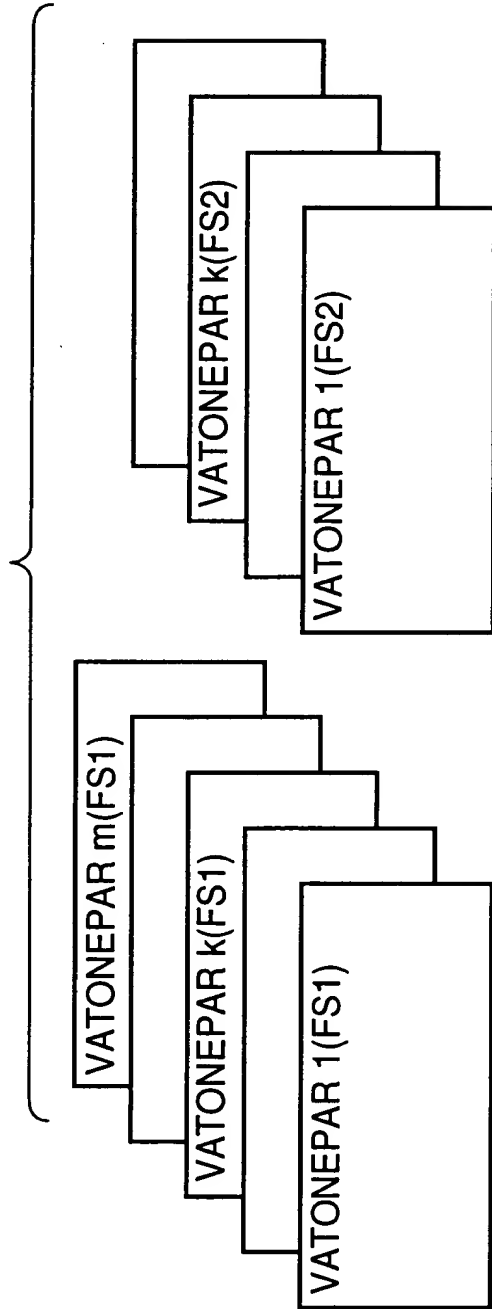


FIG.40B

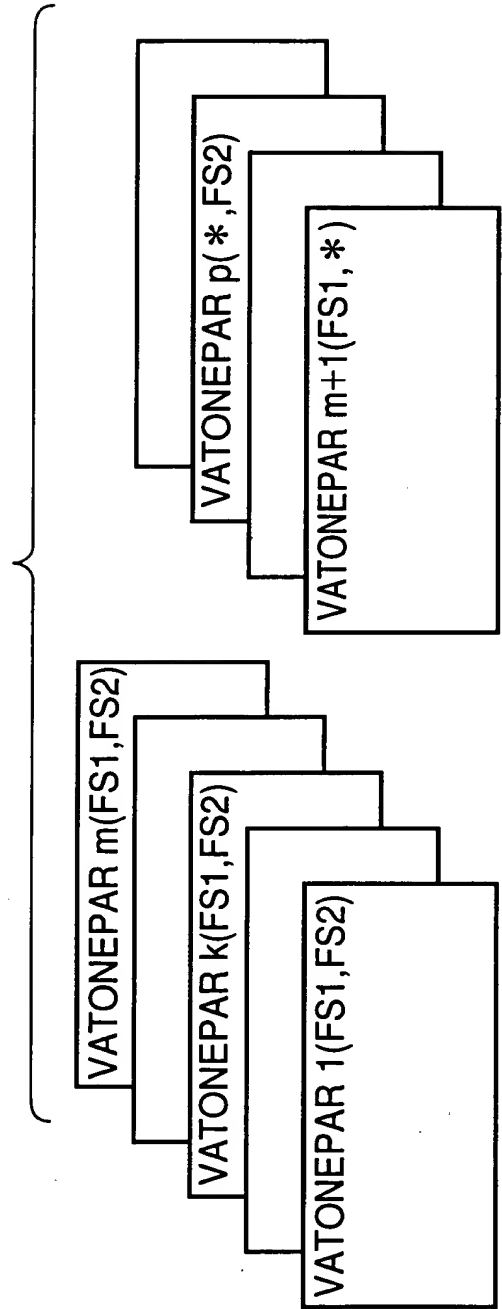
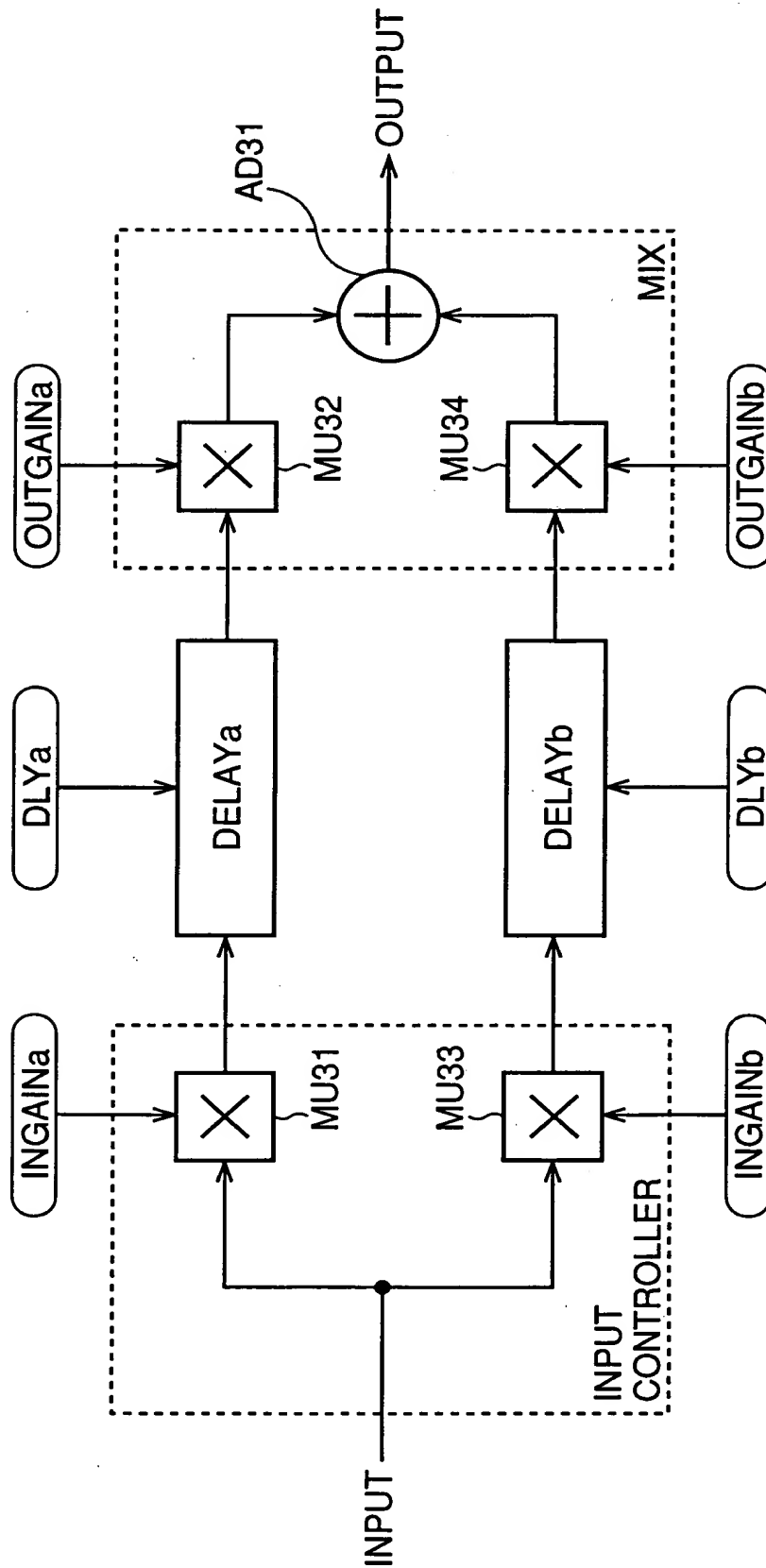


FIG.41



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.42A

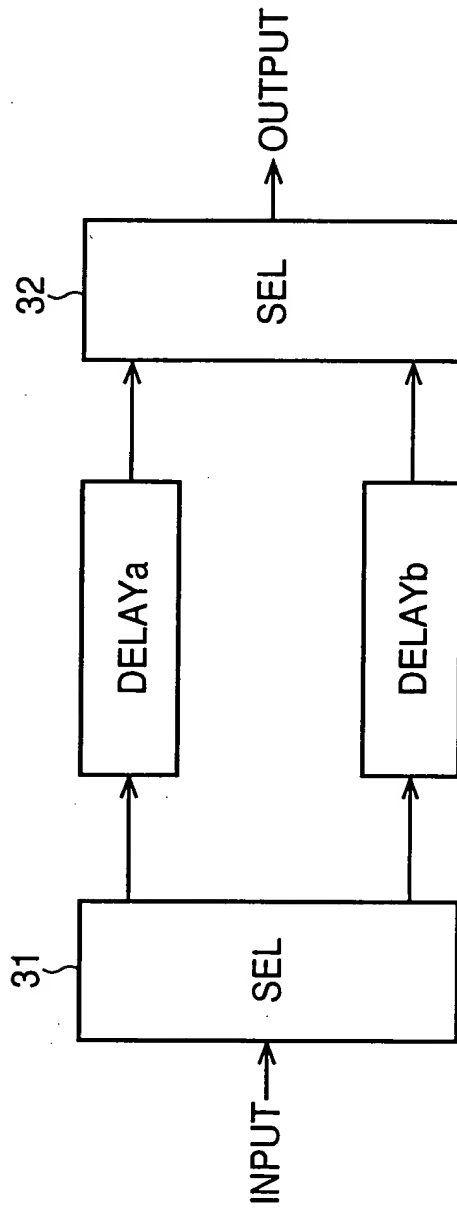
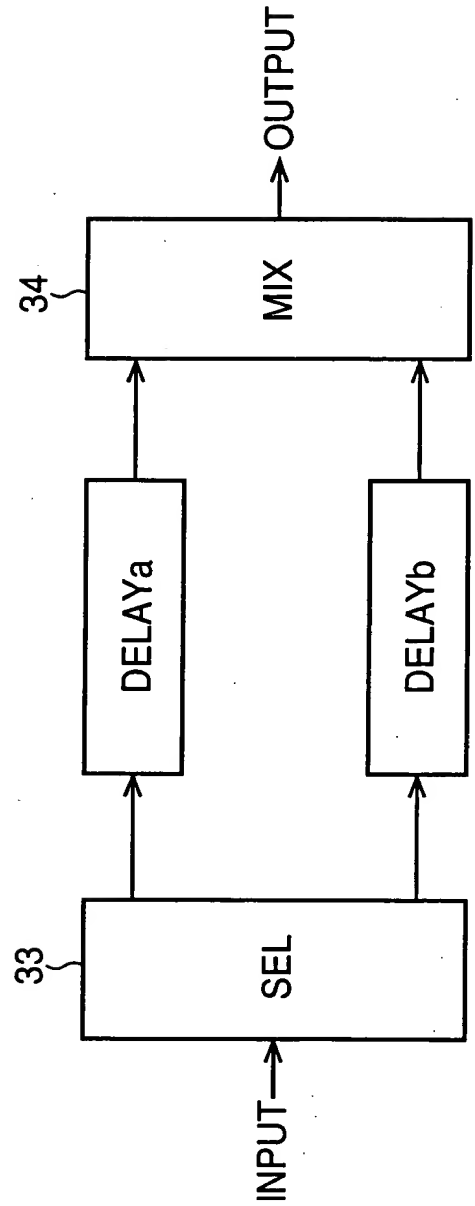


FIG.42B

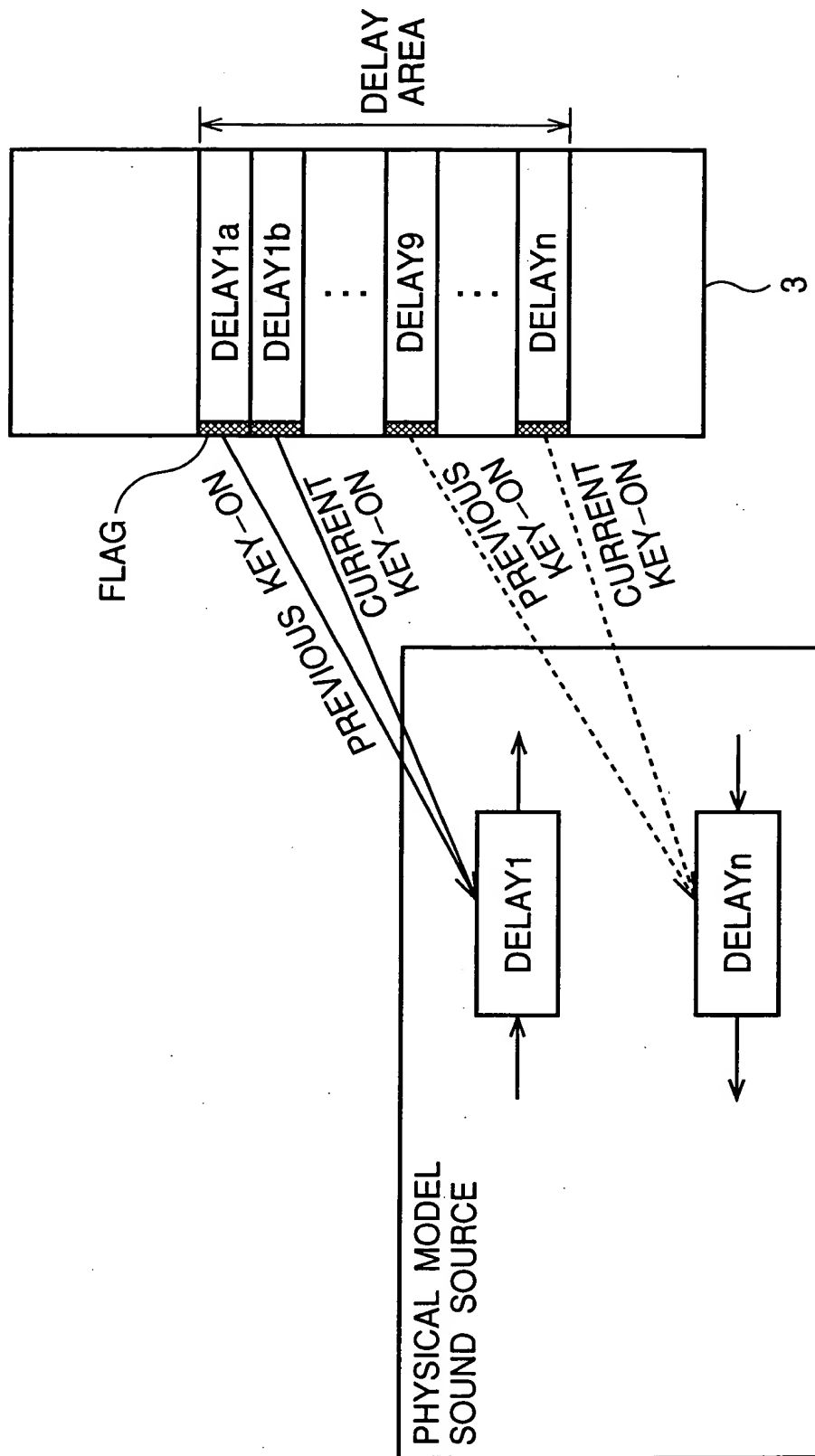


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APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

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FIG.43



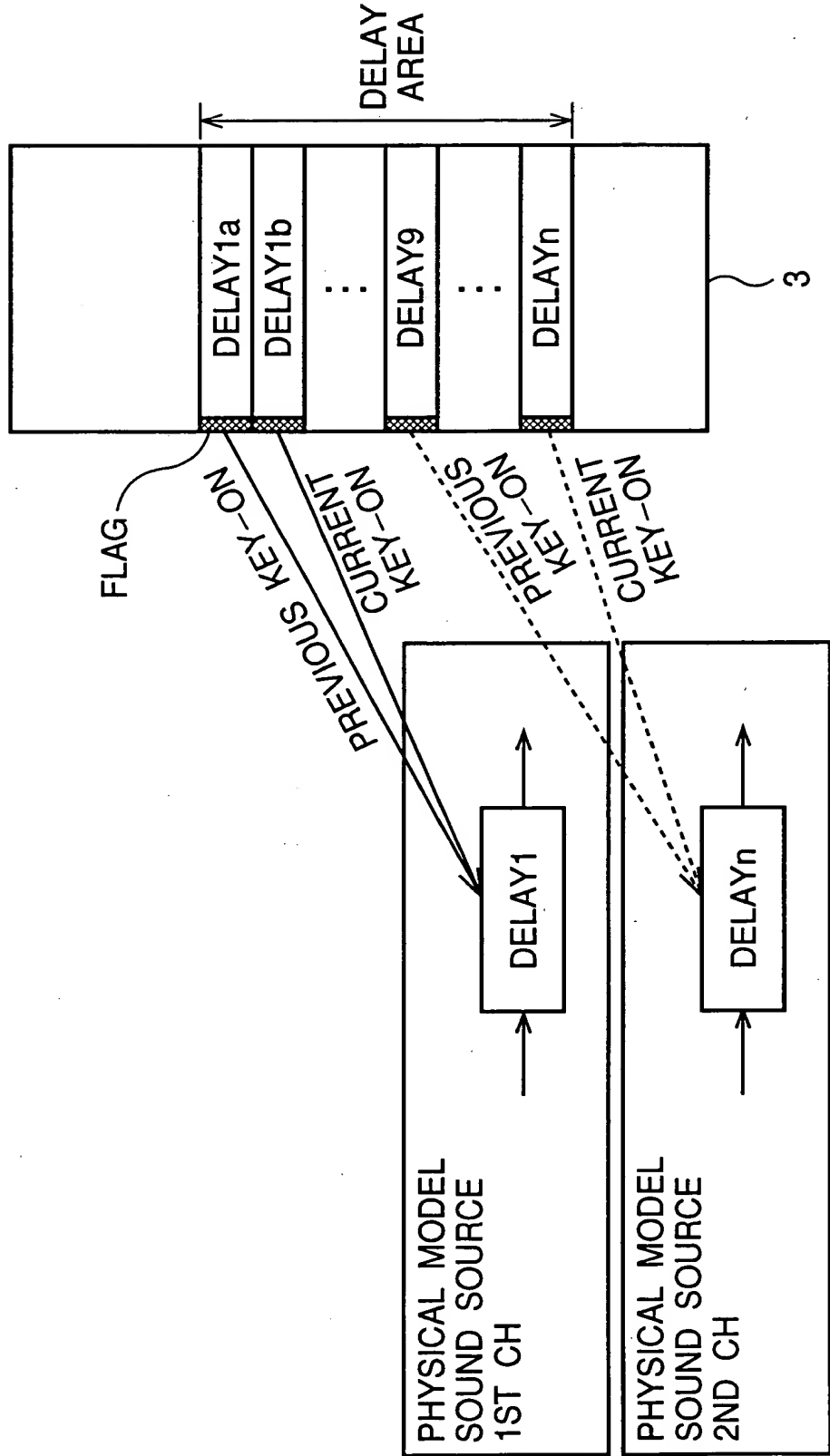


FIG.44

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